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AN
ENQUIRY INTO THE CAUSES
WHICH HAVE MOST COMMONLY PREVENTED
SUCCESS IN THE OPERATION
OF
EXTRACTING THE CATARACT;
WITH AN
ACCOUNT OF THE MEANS
BY WHICH THEY MAY
EITHER BE AVOIDED OR RECTIFIED.

TO WHICH ARE ADDED,
OBSERVATIONS
ON THE
DISSIPATION OF THE CATARACT,
AND ON THE
CURE OF THE GUTTA SERENA.

ALSO,
ADDITIONAL REMARKS
ON THE
EPIPHORA; OR, WATERY EYE.

The Whole illustrated with a Variety of Cases.

By JAMES WARE, SURGEON.

LONDON:

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P R E F A C E.

TH E author of the following pages having seen the operation of Extracting the Cataract performed by a great variety of persons, has not only had opportunities of observing the success and happy consequences which result from skill and dexterity, but, too frequently, has had occasion to lament the fatal evils which arise from an improper treatment of this disorder.

order. In this country, he believes, it will be admitted, that the late Baron de Wenzel was, without exception, the most skilful operator of his time; and that his son, the present Baron, in a Treatise on this subject, with which he has favoured the world, has, with candour and fidelity, related the manner, in which the operation was performed by his father, and himself, both in the simple state of the disorder, and when complicated, as is frequently the case, with various other diseases of the Eye. The Baron has in this work confined himself, principally, to a description of the mode, in which the operation

operation might be best performed; and he has rarely deviated from this line, either to mark the errors of former operators, or to point out the accidents to which those are liable, who, adopting his father's plan, have not, at the same time, attained his father's dexterity. In the various departments of Surgery, however, as well as in those of common life, it is of no small importance to be acquainted with the mistakes of others. Under this impression, the author has, for a long time, made it his custom, to commit to writing every accident or mistake that has fallen within his observation; and

as he has frequently found that a review of these memoranda has been beneficial to himself, in this particular branch of Surgery, he hopes he may render some service to the Faculty at large, by arranging them in a regular order, and by offering them, in their present form, to the notice of the public. This has been his object in the first of the following Tracts.

The second Tract is on the Dissipation of the Cataract. Instances of cures, accomplished in this way, have repeatedly occurred to the author, when the disorder has been produced by an external
cause

cause ; infomuch that he indulges the opinion, that, under fuch circumstances, the operation will rarely, if ever, be neceffary. The three cafes which are defcribed at length, under this head, were published in the third volume of the Memoirs of the Medical Society of London. Of thefe, it is true, one only was produced by accident; but in the Notes, which the author has now added, notice is taken of many others which were diffipated, and where the fight was reftored, without any operation whatever. The two cafes, in which the Cataract was produced without a known caufe, and in which

which the sight was recovered without the aid of an operation, are the only instances of this kind, of which the author has obtained a satisfactory account. He is unable, at present, to draw any practical inference from them; and relates them as extraordinary cases, the account of which, at some future period, he hopes may lead to publick use.

The greater part of the third Tract, on the Cure of the Gutta Serena, was also published in the third volume of the Memoirs of the Medical Society of London. What is now added consists only of the seventh and eighth cases.

They are selected from several observations of the author, on the successful treatment of this disorder.

The last Tract is on the Epiphora, or Watery Eye. It contains a few remarks, in addition to those the author published on this subject, in the year 1792. His chief object, in introducing them here, is to recommend, under the particular circumstances that are mentioned, some variations in the mode of cure. These are sanctioned by a description of six cases successfully treated.

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Jan. 1, 1795.

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THOSE professional men, who engage in the operation of extracting the Cataract, are seldom so wholly defective in judgement as to be unable to discriminate between the cases to which this operation is adapted, and those in which it is improper: Nor can their knowledge of the structure of the eye, and of the general rules by which the operation ought to be conducted, be often justly called in question. Admitting, however, that they possess these necessary qualifications,

fications, it is yet possible, if they have not had an extensive experience in this branch of surgery, that they may happen to be inattentive, at the time of operating, to some minute circumstances, relative to the operation, which, though apparently inconsiderable, are in their consequences highly important, and which, by a timely attention, might have been so regulated as not materially to interfere with its ultimate success.

In order to impress the mind of such persons with a just sense of the importance of these accidents, I propose in the following pages to give some account of the most considerable of them. And in doing this I mean to class them under the following heads; viz. such as arise,

First, From making the incision through the Cornea too small :

Secondly, From wounding the Iris with the Cornea knife :

Thirdly, From suffering a portion of the vitreous humour to escape :

Fourthly,

Fourthly, From extracting only a part of the Cataract, and leaving the remainder behind in the eye :

Fifthly, From suffering foreign bodies, after the operation, to press unequally on the ball of the eye :

And, Sixthly, From prematurely exposing the eye to the action of too strong a light.

The first accident I propose to consider is that of making the incision through the Cornea too small.

It must be obvious to every one, that if the incision of the Cornea, through which the Cataract is to be extracted, be not somewhat larger than the Cataract itself; a degree of violence will be required to bring the Cataract through it; and in consequence of this, if the Cataract be not altered in its figure, the wound in the Cornea will be forcibly dilated, and the edge of the Iris which forms the rim of the pupil be compressed between the Cornea and the Cataract, and be liable either to have some of its fibres ruptured, or to be otherwise so much injured as to excite a considerable degree of inflammation,

mation, and ultimately to hazard a contraction or a closure of the pupil.

This accident is in general occasioned by the inattention of the operator to the natural unsteadiness of the patient's eye, and by his omitting to use proper means to fix it, at the time that the Cornea knife is carried through the Cornea. In consequence of this omission, as soon as the instrument has pierced the Cornea on the outer side, the eye moves inward toward the nose; and before the point of the instrument can reach the inner side of this tunic, the greater part of it is hid from the operator's inspection; and he is afterwards obliged to continue the incision without seeing what he is about. Hence it often unavoidably follows, that he is under the necessity of bringing the knife through, on the inner side of the Cornea, much anterior to its connection with the Sclerotica: and sometimes it has been brought out, from the same cause, directly opposite to the pupil.

But the unsteadiness of the patient's eye is not the only circumstance which may cause

the incision through the Cornea to be made too small. This defect in the operation may arise from the inattention of the operator to various other circumstances. It may, for example, proceed from his commencing the incision through the Cornea below the transverse diameter of this coat; in consequence of which, notwithstanding the point of the knife be carried properly through the anterior chamber to the inner rim of this tunic, and its edge be afterwards brought down, so as accurately to divide the Cornea at its inferior connection with the Sclerotica, the incision will still be too small, as it will not take in nine-sixteenths * of the circumference of this tunic; which extent the incision ought always to occupy, in order to give the Cataract good room to come through it. Formerly, indeed, I was inclined to think it adviseable to make the incision through the Cornea smaller than is here mentioned, in order with the greater cer-

* By the expression, nine-sixteenths, I mean something more than half the circumference of the Cornea.

tainty to avoid wounding the Iris; but then I always took care to enlarge the incision with a pair of curved blunt pointed scissars, before any attempt was made to extract the Cataract. I often succeeded very satisfactorily in this mode of operating; but have now long since relinquished it, a greater share of experience having enabled me to secure the Iris from being injured, though I make the incision through the Cornea sufficiently large, with the Cornea knife alone. This mode of completing the incision with one instrument, and at one time, appears to me greatly preferable to the former mode; such an incision being more likely to be smooth, and to heal by the first intention, than one which is made with two different instruments. I might also add that it is more expeditious; but this is of little moment, if the success of the operation be not at the same time rendered more certain by it*.

When

* In three cases of the Cataract which have lately come under my notice, the Cornea was not only remarkably flat,

When the incision through the Cornea is made too small, that is, when it does not comprehend nine-sixteenths of the circumference of this tunic, be the cause of the accident whatever it may, this incision should be enlarged, before any further progress is made in the operation; and the enlargement, as I have above mentioned, will be best accomplished by means of a pair of curved blunt pointed scissars. The scissars may be introduced with more ease on the outer side of the Cornea, where the knife first punctured this coat, than on the inner side; the in-

flat, but the Iris appeared to project forward in the anterior chamber of the aqueous humour, forming a convex instead of a plain surface. In cases of this description, the anterior chamber is so small that if an attempt be made to compleat the division of the Cornea by one incision, so as to include in it half the circumference of this tunic, it will be found extremely difficult, if not impossible, to carry the point of the knife from the outer to the inner rim of the Cornea, without wounding the Iris. Under such circumstances therefore I would advise the operator to include only one third of the Cornea in the first incision, and afterwards to enlarge the aperture on the outer side by means of the curved scissars.

cision being generally smoother here than at the place where the instrument came out. The operator however should on no account attempt to use a pair of scissors, or any other instrument, whilst the eye is hid from inspection under the upper eyelid ; but should always wait until the Cornea be brought fully within his view. From inattention to this circumstance I have seen a surgeon, whilst enlarging an incision through the Cornea, entangle a part of the Iris, together with the Cornea, between the blades of the scissors ; in consequence of which, both these coats of the eye were divided and a violent inflammation soon ensued, which prevented the success of the operation.

Again ; Although, the operator carry the point of the Cornea knife accurately through both the inner and the outer side of the Cornea ; yet the incision may be made too small in consequence of his bringing the edge of the instrument through, before it has reached the inferior margin of this tunic, where it is united with the Tunica Sclerotica. This, though a fault, appears to me to be much less

less injurious than that of bringing the point of the knife out, before it has reached the circumference of the Cornea on the side next the nose; since, in general, a wound of this kind affords a much smaller resistance to the extraction of the Cataract than one made in the last mentioned way. But if, from either of these causes, difficulties occur in bringing the Cataract through, the incision must be enlarged by the use of the curved scissors. It should be remembered that though the incision of the Cornea be made sufficiently large to allow the easy extraction of the Cataract through it, yet if it be not near the circumference of the Cornea, the opaque scar it occasions will be a blemish when the cure is completed: And if it do not extend below the level of the pupil, it will be apt to entangle the edge of the Iris, and to alter the figure of this aperture. I was once present at an operation when the incision through the Cornea appeared to be accurately made, and to have its full dimensions; but upon examining it afterwards the opening into the anterior chamber was found much too small,
and

and the Cataract could not pass through, until it was enlarged by the scissars. In the instance to which I allude, the Cornea was remarkably tough, the knife cutting through it with as much difficulty, as if it had divided a piece of horn; and, from the apparent scar on the Cornea after the wound was healed, it should seem that the Cornea was not only tougher, but also thicker than it usually is*; and that the knife passed for a considerable distance between the laminæ of this tunic, instead of accurately separating it from the Tunica Sclerotica around its margin.

In these various ways the incision through the Cornea may be made too small; and by the methods I have now mentioned, its size may be enlarged. It is certainly desirable, however, to prevent the accident; and for this purpose the surgeon should particularly attend to the proper mode of fixing the

* A toughness of the Cornea is not an uncommon circumstance; but the toughness is seldom connected with an increased thickness of this tunic.

eye ; and should distinguish accurately between the time when pressure may be applied with advantage, and the time when this pressure becomes injurious. A moderate steady pressure may be continued with the most perfect safety on the inner and inferior side of the Sclerotica until the point of the Cornea knife has passed completely through the Cornea, a little above its transverse diameter, and has emerged for a small distance beyond the inner side of this tunic. When this is accomplished, which by some is called the punctuation of the Cornea, the design of pressure is answered ; and the continuance of it for a longer time would not only be unnecessary but is also injurious. The knife alone will now be sufficient to prevent any improper motion in the eye. The fingers of the operator therefore must be wholly removed from pressing on the eye, and the instrument afterwards be steadily but gently pushed on, cutting its way down, parallel with the plane of the Iris, until its edge come out close to the lower margin of the Cornea, and has divided, as above mentioned,

tioned, nine-sixteenths of the circumference of this tunic*.

The

* In two out of four cases of the extraction of the Cataract related by Mr. Sparrow, a Surgeon in Dublin, who appears to have paid particular attention to this branch of his profession, it is mentioned that he found it extremely difficult to compleat the incision through the Cornea, in consequence of the eye's turning toward the inner angle of the eyelids, before the point of the Cornea knife had passed through the inner side of this tunic. Mr. Sparrow adds the following remark, which, though made by him without any such design, appears to me fully to account for the difficulty he describes. He says, "the safest and best method of securing the eye during the operation is to have the upper eyelid drawn up by an assistant, while the operator himself depresses the lower one, *without making any pressure whatever on the globe of the eye* *." Baron de Wenzel expresses himself on the same subject in words that have nearly the same signification. Speaking of the mode of dividing the Cornea, he says "l'opérateur abaisse en même temps la paupière inférieure par le moyen des doigts *index et medius*, qu'il tient légèrement écartés l'un de l'autre, *et il doit avoir l'attention la plus scrupuleuse de ne faire aucune compression sur le globe, et de le laisser parfaitement libre*; ce qui est le moyen le plus sûr de diminuer sa mobilité, et de le fixer †." The opinions of

* Medical facts and observations Vol. I. published by Johnson, London, 1791.

† Traité de la Cataracte par M. de Wenzel, fils, à Paris, 1786, P. 78.

The second accident in the operation, which I shall now notice, is that of wounding the

of these gentlemen, thus strongly expressed, are widely different from those I have long entertained on this subject, and I must still beg leave to dissent from them for the reasons above stated in page 11. But, on the other hand, for the same reasons, I cannot yield assent to the unqualified advice of Mr. Richter; who, though inclined to recommend to surgeons in general the use of Specula to fix the eye, yet, with regard to his own practice says, "*Digitus ille qui palpebram inferiorem deprimit, comprimit simul paululum bulbum oculi, et sic illius motum cohibet*.*" As Richter does not define the time during which this pressure on the eye should be continued, it appears to me that those who are influenced by his advice are in great danger of continuing the pressure longer than is either necessary or safe. The same objection may be made to a similar advice which was given by the celebrated French Surgeon De la Faye.† My late partner Mr. Wathen is the only author I know who has described the mode of dividing the Cornea in the way I have above mentioned§; and it had been used both by him and by me many years, and in a great variety of cases, before the time that he recommended it publickly to the attention of the faculty.

* Observat. Chirurg. fascicul. primus A. G. Richter. Gottingæ, 1779, P. 17.

† Memoires de l'academie de Chirurgie à Paris, Tom. vi. P. 314.

§ Dissertation on the Cataract by I. Wathen, published by Cadell, 1785, P. 99.

Iris with the Cornea knife. The principal cause of this accident appears to me to be a premature discharge of the aqueous humour ; by which I mean, the discharge of this humour before the knife has passed through the Cornea low enough to hinder the lower part of the Iris, which forms the inferior rim of the pupil, from getting beneath the edge of the instrument.

My meaning will be better understood, if it be recollected that the Cornea knife should pierce the outer side of the Cornea rather above than below the transverse diameter of this tunic, and about the twentieth part of an inch anterior to its attachment to the Sclerotica. It should be carried through the Cornea nearly in a horizontal direction, and its point be brought out on the side next the nose, at the same distance from the Sclerotica, as it was when it first pierced the Cornea. After this the knife should be continued downward, so that the incision it makes may comprehend nine-sixteenths of the circumference of this tunic. The knife, however, being necessarily narrow
near

near its point*, will have pierced through both sides of the Cornea, before its lower edge will have advanced so far as the inferior rim of the pupil; and if, previously, in consequence of any inaccuracy in the shape of the knife, or of any unsteadiness in the mode of passing it, the aqueous humour make its escape, the lower part of the Iris will fall with it, and will unavoidably, pass before the edge of the instrument. This is an accident, which I believe cannot always be prevented by the utmost skill or precaution of the operator. Happily, however, we have been taught that the Iris may be reinstated after it has been thus displaced, and without suffering any injury, by applying gentle frictions on the Cornea, over the entangled part, with the point of the finger; in consequence of which, this membrane will instantly retract, and resume its natural po-

* See a description of the knife I use in a note annexed to the translation of Wenzel's treatise on the Cataract, Page 77.

sition.

sition*. In a few instances, where the eye has been peculiarly irritable, I have seen almost the whole width of the blade of the knife enveloped, during the incision of the Cornea, by the Iris projecting round its edge; notwithstanding which, an attention to the rule above given has enabled the operator wholly to disengage it, and to complete the incision without doing the smallest injury to the protruded part. But it should be remembered that though a gentle friction of the finger on the Cornea is sufficient to disengage the Iris from the edge of the knife, yet this membrane without care will protrude again as soon as the finger is withdrawn. It is therefore necessary to keep the

* “ Le plus simple et le plus sûr moyen de ne point
 “ blesser l’Iris lorsque cette membrane enveloppe le
 “ Ceratome, c’ est de faire des legeres frictions sur la Cor-
 “ née avec le doigt Index, tandis que le doigt Medius tient
 “ la paupiere inferieure abaissée, et de poursuivre l’incision
 “ en laissant le doigt appliqué sur la Cornée. On voit sur
 “ le champ l’ Iris se contracter et quitter l’ instrument.”

Wenzel’s traité de la Cataracte, P. 59.

finger

finger on the Cornea, whilst the section of this tunic is going on, and until the knife has passed so low, that the Iris is unable to come forward again under the cutting edge of the instrument.

I have said that the premature discharge of the aqueous humour, which is one of the most common causes of a wound of the Iris, may be occasioned by a want of steadiness in the operator in carrying the knife through the Cornea. By this remark I mean that the knife may not only be suffered to make a puncturation through this tunic, but that its edge at the same time may unintentionally be pressed downward so as to make an incision likewise; in consequence of which downward motion of the knife an aperture must unavoidably be left in the Cornea, through which the aqueous humour will escape. It will readily be conceived that if the Cornea knife increase through its whole length both in width and thickness, and if it be merely pushed through the Cornea, no space will be left, through

C

which

which any fluid can escape*. This is what I mean by the word, punctuation. But if at the same time that the knife is pushed through to make the punctuation, it be suffered also to cut its way down, it will leave a space above it, as has just been mentioned, through which the aqueous humour will instantly be discharged; and in consequence of it, a part of the Iris will be brought forwards under the edge of the instrument. Now, notwithstanding this accident is not without a remedy, yet as it is still better to avoid the need of recurring to it, I would recommend not only to make use of a knife that is accurately constructed, but carefully to confine its action, when first introduced, to the mere punctuation of the Cornea: And when the knife has penetrated through both sides of this tunic, and its edge lies clearly

* *Latitudo laminæ a cuspidē ad manubrium sensim et haud interruptè increseat, ut quo profundius penetrat in cameram anteriorem lamina, sensim latior, eo magis sensim dilatat vulnusculum corneæ, illudque exactè semper occludat, et ita effluendi viam humori aqueo haud concedat.*

Richteri Fasciculus primus, P. 21.

below

below the lower rim of the pupil, it will still be proper to pass it on, and at the same time to give it an inclination downward by a gentle steady pressure, in order to compleat the section as near as possible to the rim which connects the Cornea with the Tunica Sclerotica. If the incision be made by the continued propulsion of the knife, it will be more even and smooth than if the instrument be passed backward and forward in a seesaw direction; and the possibility of compleating the incision in this way will be admitted, when it is recollected that the broadest part of the Cornea knife is exactly equal in dimensions with the semi-diameter of the Cornea, and that this is nearly as much of the tunic as is necessary to be divided in the present operation. It may here be objected that if the section through the Cornea be made transversely, it will not be easy to compleat it, by the mere progression of the Cornea knife, without entangling the point of the instrument in the skin of the nose. A wound here cannot be of any considerable consequence; but even this, trifling as it is, may

be obviated by making the incision obliquely, instead of making it transversely: only let it be remembered that in whichever of these directions the incision be made, it ought always to include the largest portion of the circumference of the Cornea.

But it has been said that the Iris may be wounded by the back of the Cornea knife as well as by its edge. Such an accident can only happen through an inaccuracy in the make of the instrument. And on this account, as well as others, I beg leave to recommend to operators, a careful inspection of every instrument they employ, before they begin to use it. The back of the Cornea knife requires a particular examination. Although it is requisite to be thin, it should never be allowed to cut above the eighth part of an inch beyond its point. This with the sharp edge of the instrument is fully sufficient to give it an easy passage through the Cornea; and if it be thus constructed, enough of its back will still be left blunt to secure the Iris from being injured by it.

The

The third accident in the extraction of the Cataract, which comes next under consideration, is that of suffering a part of the vitreous humour to escape out of the eye.

The most common cause of this accident is the undue application of pressure. It may take place either at the time that the incision is made through the Cornea, or at the time of extracting the Cataract out of the eye. Some eyes are subject to a spasmodic action, which renders them more liable to this accident than others are; but, notwithstanding, if care be taken to avoid the use of undue pressure I have reason to believe, that, in common cases of the Cataract, the discharge of the vitreous humour will rarely happen.

As to the discharge of this humour at the time the incision is made through the Cornea, it must be obvious that if pressure be continued on the eye one moment after the incision through this tunic is compleated, the pressure will be liable to rupture the tender cap-

fules both of the crystalline and of the vitreous humours, and suddenly to force out the former of these, together with more or less of the latter also. It was most probably a dread of this accident that induced the Baron de Wenzel to discourage *in toto* the application of pressure during this part of the operation. But although the reasons above advanced will not allow me to coincide exactly in sentiment with the Baron on this subject, yet I am clearly of opinion, that every kind and degree of pressure should be taken from the eye before the knife has compleatly cut its way through the Cornea. And as soon as the knife has proceeded sufficiently low to secure the Iris from being wounded by the edge of the instrument, the operator, in order more certainly to avoid the counteraction of the upper eyelid, (which if considerable, might injuriously press on the eye,) should not only take heed that his own fingers do not touch the eye, but should also direct the assistant, who supports the upper lid, to remove his
fingers

fingers entirely from this part*. Notwithstanding the upper lid be left thus free, a sufficient space will still remain, between it and the lower lid, to give a full view of the progress of the knife: and, afterwards in completing the incision, the operator should depress the lower lid with great gentleness, and should be particularly careful, when the Cornea is tough, to avoid dragging the eye outward; from an inattention to which circumstance I once saw the capsule of the crystalline humour ruptured, and the crystalline, together with a part of the vitreous humour,

* It is rarely necessary for the assistant who supports the upper eyelid to make any pressure on the globe of the eye: nevertheless where the prominence of the eye, and the space between the edges of the two lids, are sufficient to allow a finger of the assistant to be placed on the inner and upper part of the globe, without interfering with those of the operator, it may be thus used, in order still more fully to fix the eye, during the time that the Cornea knife is carried through the Cornea; but as soon as the punctuation of this tunic is completed, the operator should never fail to direct the assistant's finger to be immediately, and wholly, removed, as well from the eyelids as from the eye itself.

suddenly expelled, although no external pressure of any other kind appeared to be used.

But a portion of the vitreous humour may also be discharged in consequence of an improper mode of puncturing the capsule of the crystalline humour. The part in which it is most desirable to make the puncture of the capsule is in the centre of the pupil; because here the thickness of the crystalline affords the operator a certainty, that the instrument, with which the puncture is made, will not pierce through the posterior as well as the anterior side of the capsule. But if, on the contrary, the puncture be made nearer to the circumference than the centre of the pupil, as the crystalline is both thinner and softer in this part, the instrument will be liable to pass through both sides of the capsule, and to pierce at once into the substance of the vitreous humour. In such a case the vitreous humour (which is much less firm in its consistence than the crystalline, and often almost fluid,) having no longer any barrier to prevent its discharge, is liable to be forced

forced out, in a considerable quantity, by the action of the eyelids alone; and when pressure is afterwards made to bring the Cataract through, its quantity will be much increased, and the Cataract, instead of coming forward, will recede from the pupil, and either will descend toward the bottom of the eye, or will move to the side opposite to that where the faulty puncture is made. Every attempt afterwards to bring the Cataract through, by the application of pressure on the eye, must prove not only fruitless but injurious; and the only way now to extract it is by having the upper lid gently raised by an assistant*, whilst the operator, either with the fore finger of the left hand, or with the blunt end of the Curette, applied beneath the incision in the Cornea, prevents the Cataract from sinking lower; then with the right hand let him introduce a hook under the flap of the Cornea, and with the

* This is one of the rare instances in which it may be necessary for the operator's assistant to support the upper lid after the incision is made through the Cornea.

point of it carefully entangle the Cataract and bring it away. This process of the operation may cause an additional discharge of the vitreous humour; but as it has been attended with success, in two cases that came under my own observation, I think it ought not to be omitted under the circumstances that have been just described. As prevention of difficulties, however, is at all times better than their cure, I would advise the operator on no account to attempt to puncture the capsule, whilst the eye is concealed under the upper lid, but patiently to wait until he obtains a sight of the whole pupil. The instrument I usually employ to make the puncture is a flat gold pointed needle, arched toward its extremity*. In order to avoid wounding

* The only difference between the instrument I use to puncture the capsule and that employed by the Baron de Wenzel is this: The Baron's instrument is flat at its extremity, whereas mine is pointed. As to the mode recommended by the Baron to puncture the capsule of the crystalline humour at the same time, and with the same instrument, with which the incision is made through the Cornea, this is so hazardous, and at the same time so unnecessary,

wounding the Iris it should be introduced under the flap of the Cornea, with its arched part uppermost, until its point be on a level with the center of the pupil. The end of the instrument should then be turned inward, and be gently rubbed on the capsule of the crystalline until it pierce through it; which office it usually effects without any difficulty. The operator is made sensible when the perforation takes place, not only by a sensation at the point of the instrument which cannot easily be mistaken, but in general by the discharge of a whitish humour under the Cornea. In a few instances I have found the capsule of the crystalline humour so very tough that it would not admit the point of the instrument above described to pass through it*; in which case a sharp pointed

unnecessary, that I think it needless to take further notice of it here. See a note on the subject in the Translation of Wenzel's treatise on the Cataract, Page 112.

* Although, in point of firmness, the Cornea and the capsule of the crystalline humour usually bear some proportion to each other, yet this cannot always be depended

ed steel instrument of the same diameter, and arched in the same manner as the gold pointed one just mentioned, should be employed. This being much sharper than the other will, I think, infallibly enable the operator to accomplish the intended purpose.

A portion of the vitreous humour may also be discharged at the time of extracting the Cataract out of the eye : and when it happens at this time, as well as when it takes place at the times that have been already considered, I am of opinion that the usual cause of the accident is an undue application of pressure. Without adverting here to the application of violent pressure, where the incision through the Cornea has been made of its proper dimensions, (which pressure in such a case is unnecessary as well as highly improper,) if the incision be made at first too small, and if the operator omit to enlarge it in the pended upon. I have sometimes found the capsule tough, when the Cornea has been divided with great ease ; and, at other times, after having experienced a great resistance to the knife as it cut through the Cornea, I have punctured the capsule with the gold pointed needle without any difficulty.

way

way I have described page 7, the Cataract cannot be brought through the wound without the application of such pressure: And if the pressure be continued one moment after the Cataract is extracted, the capsule of the vitreous humour will unavoidably be ruptured, and, in consequence of it, the Cataract will instantly be followed by a greater or a less portion of this humour. Pressure so continued is liable to rupture the capsule of the vitreous humour even before the Cataract is brought through the incision in the Cornea; and in this case, as has been before observed, a portion of the vitreous humour will be discharged on every repeated attempt to extract the Cataract; whilst the Cataract itself will resist them all, and will plunge deeper in the eye. Such an accident can only be rectified by first enlarging the incision in the Cornea, and then extracting the Cataract by means of a hook, in the way that is described, page 25.

It should be remembered that in cases the most favorable, when the incision through the Cornea is made of its proper size, and the degree of pressure, applied to extract

the Cataract, is adjusted in the best manner possible, the Cataract rarely comes out of the eye, at once, in a state so compleat as not to leave some portions behind, which require to be afterwards extracted. Sometimes, when the Cataract is soft, a considerable portion of it is thus left; and at other times, when its consistence has been firm, I have found it broken into two parts, nearly equal in size, one of which only has come through at first, and the other has required to be afterwards extracted by means of the Curette or little spoon. It has occasionally been necessary to introduce this instrument several times, before the whole of the opaque matter could be extracted, so as to leave the pupil quite transparent. Great care is required in conducting this part of the operation, in order to hinder the posterior part of the capsule of the crystalline from being ruptured by the end of the instrument; which accident would immediately open a way for the discharge of the vitreous humour.

A discharge of the vitreous humour may indeed take place, after the extraction of the Cataract, merely in consequence of a spasmodic

modic action in the eyelids, without any undue violence being done to the capsule, by the instruments that are employed. I was present a few years ago at the performance of an operation where this accident happened. At first I suspected that the end of the Curette had been pushed through the posterior side of the capsule, in the way above mentioned, but afterwards I think I had reason to doubt the justice of this suspicion. The incision through the Cornea, in the instance to which I allude, was made with great accuracy, both as to its size and situation ; and the bulk of the Cataract was extracted with equal care. A small opaque substance, however, being afterwards visible behind the pupil, the operator desired his assistant to raise the upper eyelid, that he might introduce the Curette to remove it. Both the operator and his assistant appeared to perform their respective parts, with care and steadiness. But no sooner was the opaque portion removed than a very considerable discharge of the vitreous humour instantly followed ; and on the patient's opening his eye, a short
time

time afterward, another portion of the same humour gushed out. This accident might certainly have been occasioned by the passage of the end of the Curette through the posterior side of the capsule of the crystalline; but as the operator was perfectly collected, and took particular care to avoid this accident, and as the patient's eye, though irritable, was fully within the operator's view at the time the Curette was introduced, I am rather disposed to believe that the strong contraction of the upper eyelid, increased by the endeavours of the assistant to keep the lid from falling, caused so great a pressure on the ball of the eye, as to produce the rupture of the capsule which gave room for the discharge above mentioned. Whatever be the opinion we entertain as to the cause of this accident, the case here stated tends to establish the propriety of a rule which I laid down on a former occasion, and constantly observe in my own practice, viz. that, after the incision through the Cornea is completed, in all the subsequent parts of the operation, “ the upper eyelid should be raised
“ solely

“solely by the fingers of the left hand of
“the operator *.” This may be done by
him with much more ease, and with much
greater accommodation to the involuntary
action of the eyelids, (which is considerably
greater in some cases than it is in others,)
than it can be by those of any assistant what-
ever. And whilst the upper lid is thus sup-
ported by the fingers of the left hand of the
operator, the middle finger of his right hand
is fully sufficient to depress the lower lid ;
and with the thumb and fore finger of the
right hand, the Curette, or any other instru-
ment that is required may be held, and be
applied to the eye with perfect steadiness and
freedom †.

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* See *Chirurgical Observations relative to the Epiphora, Extraction of the Cataract, &c.* by J. Ware, page 63.

† In a note, page 12, I have remarked that in two of the four cases related by Mr. Sparrow of Dublin * he found it difficult to accomplish the incision through the Cornea on account of the strong disposition of the eye to turn toward the inner angle of the eyelids. I have now to remark that in the other two cases, the Cataracts were suddenly expelled
without

* *Medical facts and observations*, Vol. I. page 43.

I am aware that the discharge of the vitreous humour, even in a considerable quantity, is not always fatal to the success of the operation ; and perhaps if this could take place without making any derangement in other parts of the eye, it might tend to diminish pain, and inflammation, rather than to increase these symptoms. But the misfortune here is, that when the capsule of the vitreous humour is once ruptured, this humour flows out so freely, and on the application of so small a degree of pressure, that the operator cannot afterwards inspect the eye with sufficient accuracy to determine, whether all the fragments of the Cataract are removed, so as to leave the pupil quite clear ;

without any known pressure on the eye, either by the surgeon, or by his assistant ; and in one of these a considerable portion of the vitreous humour escaped with the Cataract. Now, although all these cases proved successful under the management of Mr. Sparrow, yet I believe it will be admitted that the sudden expulsion of the Cataract is an accident, which it is highly desirable at all times to prevent ; and I have not once met with it, in a very considerable number of cases, since I have adopted the mode of practice above recommended.

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or whether the whole of the Iris has resumed its position, so as to give this aperture its proper figure. An inattention to these circumstances appears to me to have been much oftener the cause of the untoward symptoms, which sometimes have followed this accident than the mere discharge of the vitreous humour; which humour, as is well known, admits of a speedy regeneration: Whereas if any part of the inner margin of the Iris that forms the rim of the pupil be turned outwards during the extraction of the Cataract, and remain long in this unnatural position, or, if any part of the Cataract itself lodge between the edges of the divided Cornea, and prevent them from closing by the first intention, they are sufficient to excite a violent inflammation of the eye; and this most probably will terminate either in a contraction of the pupil, or, as I have sometimes seen, in a suppuration and consequent sinking of the whole organ.

The fourth accident in the operation, of which I am next to treat, is that of extract-

ing only a part of the Cataract, and leaving the remainder behind in the eye.

It is necessary for me here to distinguish between a solid part of the Cataract broken from the rest, and left in the eye, and those soft and nearly fluid portions of it, which form its rim or circumference and which, in almost every instance, separate from it, in a greater or in a smaller quantity, as the Cataract comes through the incision in the Cornea. The former of these, being of a firm consistence, is much less likely to be dissolved by the aqueous humour than the latter; and I am of opinion that this ought always to be extracted. The latter I also think it adviseable to remove, in order that the pupil, at the time of the operation, may be made perfectly clear, unless particular circumstances occur to render this improper; and the most powerful objection to the practice is, that extreme degree of irritability to which some eyes are subject, which renders the introduction of every sort of instrument, after the Cataract is extracted, not only difficult but hazardous. I usually remove
opaque

opaque portions of the Cataract by means of a Curette or small scoop, the end of which being introduced under the flap of the Cornea, and carried behind them, will, when withdrawn, bring them forwards out of the eye. Sometimes I have had occasion to introduce the Curette a great number of times; and, occasionally, when the opaque portion has been large, and has adhered to the capsule, I have been obliged to extract it with a small forceps. Before the operation is concluded, it is always adviseable to rub the end of the finger gently on the fore part of the eye, over the eyelids; which process contributes to bring within sight some opaque portions that may have lien concealed behind the Iris during the operation, and if unremoved, might afterwards come forwards, and intercept the light in its passage to the seat of vision. These, like the portions before mentioned, should be taken away, by means of the Curette or Forceps. Instances indeed may offer, as I have just observed, in which these instruments cannot be employed without danger; but they

occur very rarely, and will be still less frequent if the operator take the care of the upper eyelid into his own hands, and adjust with accuracy the degree of pressure that is necessary to keep the lid suspended. A case of this kind however has lately fallen under my own observation. I extracted a Cataract from a man whose eye was so extremely irritable, that after the incision through the Cornea was completed, it was in a constant rolling motion, not only on every attempt to touch it with an instrument, but even on separating the lids to look at it. In this instance after the bulk of the Cataract was removed, which though small was perfectly round, I thought it best, as the pupil preserved its proper shape, to desist from doing more, notwithstanding so much of the soft part of the Cataract remained in the eye as to cause the pupil still to appear very obscure, and to prevent the patient from accurately distinguishing any object that was placed before him. On the fifth day after the operation I inspected the eye, and found the pupil still obscured by an opaque substance which
seemed

seemed now to protrude through it into the anterior chamber of the aqueous humour. The inflammation was inconsiderable. At the end of a fortnight, as the opaque substance still continued to fill the aperture of the pupil, I directed a mixture, of one part æther and three parts distilled water, to be applied to the eye three times every day, by means of a camel's hair pencil. This gave at first an acute pain, but it soon went off. After using the æther thus diluted for three days, I dropped a drop of it unmixed into the eye. It gave considerable pain and excited an increase of inflammation; but they went off in the course of the next day by the use of a weak saturnine lotion. On the third day the æther was again applied; and on the fourth I had the satisfaction to perceive a small portion of the upper part of the pupil perfectly clear. I repeated the application regularly every second day, and sometimes every successive day, when the inflammation was not too great to admit of it. Under this treatment, the opacity of the pupil daily diminished, and at the end of five weeks

from the time of the operation, the whole of this aperture resumed its natural appearance, and the patient recovered his perfect sight.

I here beg leave to make a remark on the extraction of the capsule of the crystalline humour. An opacity in this capsule is the only reason that can at any time render the removal of a part of it necessary; and this is a very uncommon occurrence, unless it has been preceded by inflammation, and is accompanied with other symptoms which warn the operator of the circumstance before he begins the operation. The anterior part of the capsule can alone become the object of the operator's attention; its posterior part is necessarily hidden whilst the Cataract remains in the eye; and afterwards, if it be discovered to be opaque, it is so closely connected with the capsule of the vitreous humour, that I believe it cannot be removed by any instrument, without hazarding a destructive effusion of this humour. The anterior part of the crystalline capsule lies more fully however within our inspection; and when an
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opacity of this part accompanies an opacity of the crystalline humour, it usually shews itself by irregular opaque spots or lines visibly situated on the anterior surface of the opaque crystalline. The crystalline humour may indeed continue transparent, notwithstanding the anterior part of the capsule be opaque; but an opacity of the capsule is more commonly accompanied with an opacity of the crystalline also. When an opacity of the capsule is the consequence of violence done to the eye, as of an attempt to depress the crystalline, or, when it proceeds from an internal inflammation of this organ, an adhesion not unfrequently takes place between the anterior part of the capsule and the posterior surface of the Iris; which adhesion usually occasions a contraction of the pupil, and prevents this aperture from dilating and contracting with so much freedom as it ought, and as it would do, if the Iris were unconfined. Such a state of the eye appears to me to be a very strong objection to the performance of any operation, since the degree of the adhesion cannot

not be ascertained ; and when the adhering parts are separated, the violence which must unavoidably be done to the Iris, by the passage of the crystalline humour through the contracted pupil, will strongly dispose this aperture to contract still more, and perhaps may cause it to close entirely. If, however, from the symptoms above described, there is reason to believe that the opaque crystalline is accompanied with an opacity in the anterior part of the capsule, and if the aperture of the pupil has not wholly lost its power of dilating and contracting, an operation may sometimes, notwithstanding, be adviseable ; but in these cases it would be vain to expect success from the removal of the crystalline humour, unless a perforation be made in the opaque capsule also* ; and when this
last

* It is not unusual with medical men to speak, nor has it been unusual with medical authors to write, in a very unqualified manner, concerning the extraction of the capsule of the crystalline humour ; from which inaccurate mode of expressing themselves we might be led to imagine that the capsule might be taken away with as
much

last is necessary, it should always be accomplished before any attempt is made to dislodge

much ease as the crystalline humour itself. This however is a very mistaken idea. The capsule of the crystalline humour, in an undiseased state, is strongly attached both to the extremities of the ciliary processes, and to the capsule of the vitreous humour ; and these attachments are very rarely separated by the formation of the Cataract, or by an opacity in the capsule itself. Although the capsule completely surrounds the crystalline humour, and contains this humour, floating within it, in a kind of aqueous fluid, yet the two parts are as distinct from one another as a nut shell is from the nut it contains. The capsule of the crystalline, like the crystalline itself, is of a lenticular shape, having an anterior and a posterior portion ; but these do not seem to be strictly similar to one another. Both are equally transparent ; but the anterior part is of a firmer texture than the posterior ; and the posterior part is the only one which I have hitherto seen injected. The vessels of this posterior part are derived from an artery which passes through the centre of the optic nerve, and is continued through the middle of the vitreous humour to be distributed upon it. In a few instances I have seen the opaque crystalline escape from the eye whilst contained within its capsule ; but, when this has happened, if the eye has not been generally diseased, it has been owing to the application of too much pressure ; and it has generally been accompanied with the discharge of a part of the vitreous humour also.

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the crystalline which the capsule contains. This part of the operation I would recommend to be performed in the following manner. The cornea being divided in the same way as if the opaque crystalline alone was to be extracted, and the incision comprehending, as I have repeatedly recommended already, nine sixteenths of the circumference of this tunic, a fine pointed instrument, somewhat smaller in size than a round couching needle, and a little bent towards the point, should be introduced under the flap of the Cornea, with its bent part upward, until its point is parallel with the aperture of the pupil; the point should then be turned toward the opaque capsule, which is to be punctured by it, in a circular direction, as near to the rim of the pupil as the instrument can be applied without hurting the Iris. Sometimes the part included within the punctures may be extracted on the point of the puncturing instrument; but if this cannot be done, it should be taken away by means of a small forceps. After the perforation of the capsule is completed,

pleated, the crySTALLINE humour may easily be extracted, in the way I have above mentioned, by making a slight pressure with the Curette, either above or below the circumference of the Cornea. It is necessary to extract this humour, whether it be found opaque or transparent; since, if it be opaque, it will necessarily intercept the rays of light, though the capsule be removed; and if it be transparent, there is great reason to fear that the repeated punctuation of the capsule may destroy this transparency*.

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* The Baron de Wenzel, recommends an operation, in cases where the anterior part of the capsule is perceived to be opaque, somewhat different from that which is above described. He says in his *Traité de la Cataracte*, page 93. “ Apres avoir fait la section de la cornée, on n’incise
 “ point la crystalle anterieure, comme dans les cas ordinaires; on substitue au ceratome de petits pincés qu’on
 “ introduit dans la pupille; on saisit légèrement la capsule avec leur extremité; on la detache successivement
 “ dans toute la circonference des adherences qu’elle peut
 “ avoir contractée avec les parties environnantes, et on fait
 “ en sorte de l’enlever en entier. The Baron adds,
 “ Cette pratique ne m’a jamais paru entrainer de grandes
 “ difficultés

The next accident, of which I am to treat, is that of suffering foreign bodies of any kind, after the operation, to press unequally on the globe of the eye. Under this head I propose to consider,—the intervention of the edge of the inferior eyelid between the sides of the divided Cornea;—the inversion of the edge of the inferior eyelid;—and the lodgement of one or more loose eyelashes on the globe of the eye.

“difficultés dans les malades que j’ai opéré de semblables
“cataractes.” This advice, however, deviates very widely both from the precept and practice of his father; who, in the year 1779 I remember to have seen remove a considerable portion of the opaque capsule, precisely in the way I have above recommended; and at the time of the operation he informed me that in similar cases he always proceeded in a like manner. The father’s mode appears to me to be preferable to that which is recommended by the son; since the capsule not only forms a compleat bag to contain the crystalline, but is often so strongly attached, round its rim, to the extremities of the ciliary processes, that it would require no small force to remove a portion of it with a forceps, unless this portion were first, in some degree, detached by means of the puncturing instrument above mentioned.

I must here beg the reader to recollect that there is a concavity in the shape of the inner side of the eyelids, which answers exactly to the convexity of the globe of the eye; and that these two parts, when the eyelids are shut, lie in close apposition to each other. Hence it will readily be conceived that if the eye be turned downward, whilst the divided flap of the Cornea is loose; or if the lower eyelid be suffered to return suddenly to its natural position, whilst the eye is inclined downward; in either of these cases, the eyelid will be liable to rumple the Cornea, and to get between the sides of the wound. Whoever has been much accustomed to the operation of extracting the Cataract must have observed that this takes place, not unfrequently in performing those parts of the operation which are subsequent to the incision of the Cornea. And if, after the operation is ended, the eye unfortunately be left with the edge of the lid against the Iris, the Cornea at the same time being rumpled, and a large space left open for the continual discharge of the aqueous humour,

an inflammation of the most violent kind must unavoidably and speedily ensue. On this account I cannot too earnestly recommend to every operator, previous to the application of dressings to the eye, carefully to depress the lower eyelid with his finger ; and, before he suffers the lid to rise, to take care that the flap of the Cornea be accurately adjusted in its proper position, and that the upper lid be dropped so as compleatly to cover it. The dressings are then immediately to be applied* ; nor do I think it right after this to open the eyelids again, until there is good reason to suppose that the wound in the Cornea is perfectly closed. This may indeed take place within the first twenty four hours, but I believe no one can absolutely ascertain that the union is compleat in less than three or four days ; and sometimes the wound has continued open for a much longer time.

* For a description of those which I usually employ see a note annexed to the translation of *Wenzel on the Cataract*, Page 224.

Again,

Again; the edge of the inferior eyelid is liable to be inverted, as well as to insinuate itself under the flap of the divided Cornea; and the inversion may take place not only at the time of the operation, but afterwards also during the time that the eyelids are kept shut. In some instances the propensity of the edges of the lids to become inverted is perceptible before the operation is performed; and when perceived it ought always to be previously rectified. It is a fortunate circumstance that the lower eyelid; is more commonly affected in this way than the upper eyelid; since an inversion of the edge of the former may be remedied with much more ease and with much greater certainty, than an inversion of the edge of the latter. When the inversion is recent, its cure may sometimes be accomplished by bathing the loose skin of the lid with a solution of alum, and afterwards making a large fold in the skin, and preserving the fold by the application of a strong adhesive plaister over it; extending the plaister down for a small distance over the cheek, in order to make its hold the

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more secure. But when the inversion has continued a great length of time, I have usually been obliged, with the same intention, to cut off a transverse portion of the skin just below the edge of the lid, and afterwards to confine the sides of the wound together, by means of two or three sutures ; which mode, in repeated instances, has effectually answered the intended purpose*. An inversion of the edge of the eyelid may indeed take place after the extraction of the Cataract, although no tendency to this disorder were observed previous to the performance of the operation. I do not believe, however, that this accident often occurs ; but with a view to obviate the inconveniences to which it may give rise, I would advise

* As the friction of the eyelashes against the globe of the eye is the chief cause of the injury which an inversion of the eyelids is apt to produce, an accurate extraction of the eyelashes, by means of a small pair of forceps, on the day previous to the operation for the Cataract, may perhaps prove sufficient to prevent the inversion from doing any injury to the eye ; but it must be evident that this will only prove a partial cure, as on the reproduction of the lashes all the symptoms they produce will necessarily return.

to draw the skin of the lower eyelid down as often as the dressing on the eye is renewed ; and if, from the appearance of the lid, and the pain experienced by the patient, there is reason to apprehend that, after the edge of the lid has been everted, it speedily again assumes its inverted position, the patient should be directed to apply his finger as constantly as he can to the skin on the edge of the orbit, in order to counteract the morbid propensity. I was once obliged, in a case of this kind, to remove a portion of the skin below the lid, within a few days after the Cataract was extracted, and afterwards to connect the sides of the wound together by means of two sutures in the way I have above mentioned. This operation succeeded to the full extent of my wishes. The patient was instantly relieved from the pain which the inversion occasioned, and in about a fortnight from the time that the Cataract was extracted she recovered her perfect sight.

It has lately been said that a long continued use of bandages will cause an Entropium.

pium. If by the words "long continued" be meant only their continuance for about five days or a week, (which I believe is the full extent of time that the late Baron de Wenzel continued them for many years before his death, or indeed, that the present Baron recommends them to be continued, in his treatise on this subject,) I must take the liberty to say that the experience I have had inclines me to entertain a different opinion on this subject. In a few instances, as is above observed, I have seen an inversion of the edge of the lower eyelid take place shortly after the operation was performed; but, if I recollect rightly, all who suffered from this cause were persons advanced in life, and their eyelids particularly loose and flaccid. On this account I am inclined to believe that the edges of the eyelids would have been still more forcibly contracted, if their eyes had been exposed to the light during the state of irritation in which this organ usually is for a few of the first days after the operation, than they were whilst defended from it by a thin cover.

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I beg leave to add that within a short time I have been consulted by two old gentlemen, each of whom had a Cataract fully formed in one eye, and a similar opacity advancing in the crystalline humour of the other; and in both of these, the edge of the lower eyelids not only shewed a disposition to this disorder, but was actually always inverted unless kept out by the finger. It is remarkable that one of these gentlemen had suffered so little inconvenience from the inversion of the lid, that he was ignorant of it when he first applied to me; the application being made solely on account of the dimness of his sight. But, notwithstanding this, I shall certainly think it my duty in both cases to remove the inversion before I proceed to extract the Cataracts.

Besides the danger to which the eye is exposed, after the operation, from the inversion of the edge of the lid, the eye may receive injury from the improper position of the eyelashes alone; one or more of which, during the operation, may happen to bend inwards; or, becoming loose, may

afterwards insinuate themselves between the inside of the lid and the globe of the eye. I have been a witness to both these accidents; and it must be evident, if they are suffered to remain unrectified, they will produce the worst effects. They too often arise from the incautious manner in which the upper lid is supported by the operator's assistant. In those cases, for instance, where the eye is situated deep in the orbit, it is often necessary for the assistant to apply his finger to the very edge of the lid, and to confine this part against the frontal edge of the bony orbit, in order to hinder the lid from falling. Now in doing this, if he be not careful to keep the eyelashes perfectly strait, his fingers will be apt to bend them; and, if they are but slightly attached, he will, perhaps, draw them out by their roots. A recollection of the possibility of these accidents will not only teach the assistant to be cautious in his mode of supporting the upper lid, but will impress on the operator the importance of examining the eye carefully, after the operation is finished, and of removing every foreign particle

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particle lodged within the lids that is in the least degree likely to give pain or increase inflammation. If an eyelash be bent inward, it should be replaced in its proper position; and if it be broken off and lie loose on the ball of the eye, it should be removed by means of a small forceps.

The last accident attending the operation, which I propose to consider at this time, is that of prematurely exposing the patient's eye to a strong light. The slightest consideration will convince the reader, that though the operation be performed in the best manner possible, and though it succeed in every part to the utmost extent of the operator's wishes, still it must excite in the eye a degree of irritability which strongly disposes it to a state of inflammation. The ophthalmy very often does not come on until three or four days after the operation, at which time some degree of it is usually expected after other operations as well as after this. Until such a portion of time has elapsed, no one can ascertain to what a height it may proceed;

and, until this period, it appears to me peculiarly desirable to avoid the application of every stimulus that has the smallest tendency to increase it. The common light is a stimulus only when it is applied to a weak eye. A sound eye not only bears it, but is pleased with it; whereas an inflamed eye, which is usually weak also, naturally shuns it. Immediately after the extraction of the Cataract, light gives no pain to the patient; and probably it would not give a great deal for a day or two; but notwithstanding this, as the eye is now in a state of irritability, and as it is liable, about the third or fourth day, without any additional cause, to suffer from an increase of inflammation, I cannot but think it imprudent to increase the risk of it, in the mean time, by an unnecessary exposure.

Another objection to the practice of opening the lids within the first two or three days after the operation, is derived from the danger of disturbing the wound in the Cornea before this is entirely closed. It is not easy to ascertain the exact time when a union
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between the sides of the wound takes place ; but if a comparison be made between the process of nature here, and that which takes place in other operations where a union between divided parts is required, it cannot be supposed that this union will be compleat in less than two or three days, at least ; and sometimes it may require a much longer time. Although the friction of the eyelid against the sides of the wound may not be sufficient, at an earlier period, so to open or widen the wound as to allow the edge of the lid to insinuate itself into it, (which would have happened immediately after the operation,) yet this friction may interfere with its speedy and compleat union ; it may cause the aqueous humour to pass through the wound longer than it otherwise would do ; and of course it may keep the anterior chamber longer empty. From the same cause also, a portion of the inferior part of the Iris is liable to be pushed through the wound, together with the aqueous humour ; whereby the round figure of the pupil may be altered, and sometimes
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a staphyloma be induced; which circumstances will contribute to keep up the inflammation for a considerable time longer than it would have otherwise remained.

The practice of examining the eye on the day after the operation of discharging the matter contained within the Cornea, in cases of the Hypopion, has been urged as an argument for a like treatment after the operation of extracting the Cataract. But it should be remembered that these two operations differ in many material respects. In the operation for the Hypopion, it is rarely necessary to make the incision through the Cornea so large as it is in that for the Cataract; nor is the derangement of the internal parts of the eye so considerable in the former as it is in the latter. And, besides, in cases of the Hypopion the inspection of the eye, on the day after the operation, is necessary in order to enable the surgeon to obviate evils which may reasonably be expected at that time to occur; but in cases of the Cataract no possible advantage, so far as I have been able to learn,

learn, can be derived from this practice, unless extraordinary symptoms call for it; and on the contrary, material injury is to be apprehended from it.

I should be sorry, however, to have it inferred, from what has been here advanced, that I am an advocate for long confinement after the operation. This unquestionably was continued by former operators for a much longer time than we now know to be necessary. But in avoiding one extreme surgeons should be careful that they do not err by running into another. The mode I always follow in my own practice, unless particular circumstances call for a variation, is this. The patient is kept wholly in bed, and directed to move his head as little as possible, for the first three days after the operation. During this time a dossil of wet lint is kept on his eyes, covered with a saturnine plaister; and this is prevented from slipping, by a thin bandage carried round the head, and pinned to his night cap. The dressing is renewed once every day, and the outside of the eyelids washed with water; which

which is applied warm in winter, and cold in summer. At each time of dressing, the skin of the lower lid is drawn gently down, in order to counteract the disposition which this part sometimes acquires to turn inward on the eye. During this time the use of animal and solid food of every kind is forbidden; and soft puddings, gruel, and thin drinks, are substituted in their place. The patient is also desired to talk as little as possible with those who attend him. On the fourth day he is permitted to sit up for two or three hours, and if he has had no stool since the operation a mild opening medicine is now administered. On the fifth, the time of his sitting up is lengthened; and now, presuming that the wound in the Cornea is compleatly closed, I usually examine the state of the eye. After this the dressings on the eye may be left off during the day, particular care being taken to defend it from a strong light by the use of a pasteboard hood or shade, and by darkening the room to such a degree, that the patient feel no inconvenience from it. He may now also be permitted

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ted to look for a short time at large objects ; but the operator will not have occasion to be earnest in advising this, as it will follow of course, as soon as the patient is able to bear it. The treatment afterwards will very little interfere either with the comfort or wishes of the patient, unless unexpected accidents should render a variation necessary. Many on whom I have performed the operation, have been perfectly well in less than a fortnight ; and in a great variety of cases, the instances are extremely few in which the inflammation has continued so long as a month. The mode of treatment above recommended will not be thought rigorous, nor the confinement tedious, when the importance of the object which these are calculated to promote is taken fairly into the account ; nor do I believe that this object can be safely attained in any easier way*.

* It may be proper to add, that I usually give the patient a purge on the day, previous to the operation, in order that his bowels may be less likely to disturb him for two or three days afterwards. And, if he be of a plethoric habit, eight or ten ounces of blood should be taken from his arm immediately after the operation is performed.



ON
THE DISSIPATION
OF
THE CATARACT.

A N I N S T A N C E
O F
RECOVERY OF SIGHT,
B Y T H E
DISSIPATION OF A CATARACT,
WHICH HAD OCCASIONED
BLINDNESS IN ONE EYE FOR *ELEVEN* YEARS:
WITH A HINT GROUNDED ON IT,

Respecting the Mode of Cure in similar Complaints *.

MR. L. a merchant at Quebec, in October 1776; when about twenty-nine years of age, received a blow on his left eye by a splinter of a rusty chissel, which started from it as he was striking it with a hammer. The only bad effect, which he at first felt from this accident, was a momentary pain in the eye, and which, though

* This paper on the dissipation of the Cataract was read before the Medical Society of London, October 27, 1789;—and the Supplement that is annexed to it on the 7th of June, 1790.—The Notes are new.

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acute

acute for the present, went off without the aid of any medical application whatsoever. As the patient had then the same use of this eye as before, for all the common purposes of life, and was even able to read with it, he had not, at this time, the smallest apprehension of experiencing any material injury from what had happened. It was not, however, long, before he became sensible of some degree of obscurity in the sight of it; and from that time the dimness gradually increased, till, in less than six months after, he found himself deprived of all further assistance from this eye, than to be capable of distinguishing the strong light of day from the darkness of night. In the progress of the disorder, the eye was examined by two gentlemen of the faculty at Quebec, Dr. M'Namara Hayes and Dr. Kennedy, neither of whom, at first, could perceive any opacity in the crystalline, though afterwards it became very evident to them both. At the first appearance of the complaint, these gentlemen advised the patient to take small doses of *mercurius dulcis*; but perceiving

ceiving no good effects produced by the use of this medicine, it was soon laid aside. In the year 1777 he came to England, and consulted the late Dr. Fothergill; who, on examining the eye, entirely concurred in opinion with the physicians before mentioned—that the crystalline humour was opaque;—but, as the sight of the right eye continued quite perfect, the doctor's advice was, not to meddle at all with the other for the present. He returned to Quebec in the year following, and there remained in the same state of blindness, with the left eye, till the year 1787, when he again came to England. On the 7th of April, 1788; whilst on this second visit here, he was attacked with a violent pain in his head, which particularly affected him across his forehead. In the middle of the following night a pain seized him in the disordered eye, which, when he rose in the morning, appeared to be considerably inflamed. The other was also inflamed, though in a much less degree. The latter complaint, however, seemed gradually to abate of itself till the 14th, when

its violence returned in both eyes. At that time, the pain in the left eye was particularly severe, and extended over the temples and forehead. The following treatment was now used. The patient was let blood in the arm ; blisters were put behind his ears ; a fomentation of chamomile flowers, mixed with laudanum, was applied two hours every day to the eyes ; and laudanum draughts were given to procure him rest at night. But these means, however proper in themselves, did not, for the present, meet with the success which might have been expected from them. For, notwithstanding their use, the inflammation and pain continued with violence a week longer. Then it was that the patient, for the first time, perceived the light with the left eye stronger than before ; and in a day or two after, to his great surprise, the sight of this eye improved so much as to render him capable of distinguishing with it several large objects that were near him. The inflammation, at that time, though it had in part subsided, was still considerable in both eyes ; but, continuing

ning gradually to abate, in three weeks it went off entirely; when, not only, the sight of the right eye became as perfect as ever, but that of the other, which had been lost eleven years, was so much further recovered, that the patient was able to distinguish all large objects; even those which were at some distance, as well as those which were near. The great progress made in the cure of this eye was also very discernible in its appearance. For the crystalline humour, instead of being opaque as it before was, now resumed its natural clearness and transparency; and, in this respect, it was not to be distinguished from that of the eye which had always remained sound. There were yet, however, some remaining defects in the left eye, which made the patient very desirous of taking further advice, to see if any thing more could be done towards restoring the full use of it. Accordingly in the month following I was desired to examine it. I found, notwithstanding the crystalline humour of this eye had recovered its transparency, that the pupil was

still larger than its natural size; and though it regularly performed the office of contraction and dilatation, according as the light acted upon it, yet the Iris had constantly, besides this, a tremulous motion, similar to that which I have not unfrequently observed it to acquire, after the operation of extracting the Cataract. In cases of the latter kind, it seems to be occasioned by the loss of support which the posterior part of the Iris sustains, in consequence of the removal of the crystalline humour; and though in the case I am now describing, no such operation had been performed; yet no other account is I think to be given of this similar motion in the Iris, but that it was owing to the weak support it derived from the parts situated behind it. As to the use which the patient had of this eye, I found on inquiry, that though he had some discernment of all large objects, and of not a few a tolerably distinct one, yet he was far from seeing them, with the same degree of perfection, as with the other eye; and, with the disordered one, he was not yet
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able to distinguish, to any degree of precision, even large letters in a book. Having attended to every point of information which I had gained, both from the patient's account and my own examination, it appeared to me more than probable that the crystalline humour was completely dissolved; and this I believed to be the occasion, not only of the tremulous motion in the Iris before noticed, but likewise of that defect in sight, of which the patient still complained. I was clearly of opinion, also, that this defect could be no otherwise remedied, than by the use of a proper glass, to act as a substitute for the dissolved humour. In this judgment of the case, I was soon fully confirmed; for, upon desiring the patient to make the experiment, with a convex glass of five inches focus, on looking through it, he immediately distinguished distant objects equally well with the affected as with the sound eye. I then made a further experiment, with a convex glass of only two inches and a half focus; on the use of which, he received so much additional

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assistance,

assistance, that he could read with ease a common newspaper *. Soon after this time he returned to Quebec, the place of his residence; since which I have received no particular information with regard to his sight; but there is good reason to believe, he still retains it, in the same degree of perfection, as when he left England.

Having stated the leading particulars of Mr. L's case, I beg leave to subjoin the following remark upon it. The immediate cause of the blindness in consequence of the blow on the eye, as above mentioned, was, undoubtedly, that of an opacity in the crystalline humour. This is now universally understood to constitute the true Cataract. And I persuade myself, most gentlemen of the faculty would have pronounced the sight of an eye, in such a state

* I was led to the trial of the convex glasses above described, from their having been found to suit most eyes, after the removal of the crystalline; by either of the usual operations. The glass with the larger focus for more distant objects, and the smaller for such as were near.

of blindness, to have been altogether irrecoverable, but by one or other of the usual operations, of couching, or extraction. But in the case I have been describing, no operation was ever performed, or intended. In restoring the use of the eye, which for so many years Mr. L. had totally lost, nature herself seems to have done the chief part of the business by the inflammation, brought on, in consequence, as was supposed, of a cold, which the patient caught. For, by means of the several remedies, already mentioned in describing the case, and which are commonly made use of under similar inflammatory complaints, aided by the state of action, into which the eye was thrown by the inflammation itself, not only this inflammation was subdued, but the opacity of the crystalline humour was gradually dissipated, till, with the restoration of transparency in appearance, the sight of the eye was also recovered. This remarkable change which took place in Mr. L's eye, and the great utility of the inflammation, toward promoting so desirable an event, suggested the
thought

thought of an inquiry, first into the safety, and expediency, of employing art, to raise an inflammation, as the first step to a cure in similar cases of blindness; and secondly supposing it a safe measure, respecting the means which would be best adapted for this end. These were the two points, which I had all along in view, by the recital of the case; and to these I would principally direct the attention of the several members of this Society. Could the experiment be tried, without occasioning further danger to the patient, it might lead to the establishment of a mode of cure, which, whilst it was equally efficacious, would undoubtedly appear less formidable, than the operation now commonly advised under complaints of this nature.

A S U P P L E M E N T

TO THE PRECEDING PAPER.

SINCE the preceding paper was read before the Medical Society, I have seen two other cases of Cataracts, similar to that above described, in both of which the opacity was dissipated, and the patients recovered their sight, without submitting to any surgical operation,

One of these was that of a woman, fifty nine years of age, the sight of whose left eye had gradually decreased for ten years; and, during the last twelve months, a Cataract had been completely formed, so that she had been unable to distinguish, with this eye, any thing more than the difference between day and night. Notwithstanding this great degree of blindness, and the strong probability of her recovering sight by having the Cataract extracted, I always thought it my duty

duty to discourage her from submitting to the operation; because, though the crystalline of the right eye was also manifestly affected, yet it still retained sufficient transparency; to admit of an useful sight. In February last this woman was struck by a splinter of wood on the upper lid of the left eye, with such force, that it nearly pierced through it, and occasioned a considerable hemorrhage. The eye was almost instantly made sensible of an uncommon and unpleasant bright light; and, the following day, when I examined it, the pupil was become quite clear. It regularly dilated and contracted, according to the degree of light to which the eye was exposed, and the Iris had, likewise, the same sort of tremulous motion, which I have described in the preceding case. The patient had suffered no pain since the accident, and the tunica conjunctiva was scarcely at all inflamed. I desired her to look through the convex glasses, that are commonly found useful, after the removal of the crystalline humour; and by the assistance of these, she distinguished both
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near and distant objects as well as before the sight was at all affected *.

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* The woman, whose case is above related, preserved her sight about a year; but, at length, without any known cause to occasion it, a solid body suddenly came into the anterior chamber of the aqueous humour, which confused her sight, and afterwards, without giving any considerable pain, frequently deprived her of it. On examining the eye, I was instantly convinced that this solid body was the opaque crystalline humour; which, though invisible when I last saw the patient, was not then dissipated, but, by the violence of the blow above described, was forced out of its capsule, and had fallen to the bottom of the vitreous humour; from whence, by some unperceived motion of the head, it was now risen, and had come through the pupil into the anterior chamber. As soon as I saw the case, I advised the patient to allow me to divide the Cornea, that the opaque humour might be extracted; but the pain in the eye being at this time inconsiderable, and the sight of the other eye tolerably good, she put off the operation from one time to another, until at length, the opaque crystalline, which was one of the largest I have ever seen, returned again through the pupil into the posterior chamber, and pushed the Iris forward, so as nearly to bring it into contact with the Cornea, and to change the figure of the pupil from a round to a transversely oval aperture. Before I had an opportunity to see this change, the crystalline had formed a close union with the
edge

The other case was that of a lady, seventy-six years of age, whose right eye, in consequence of an opacity in the crystalline humour, had been incapable of distinguishing objects more than six years; and the left eye, from the same cause, more than three. In July 1789 I extracted a cataract of a very

edge of the Iris, and the light was unable to make the least impression on the Retina. The state of the eye was now so greatly changed from that in which it was when I last saw it, and the chance of restoring sight by an operation was become so very inconsiderable, that I declined the attempt; and recommended the patient to rest satisfied with the sight she enjoyed from the other eye.

The unhappy issue of the present case affords room for the following caution; viz. on no account to delay the operation of extracting an opaque crystalline, whenever it is forced, as in the instance before us, out of its capsule, and lies loose in the anterior chamber of the aqueous humour; since, in this situation, it is not only liable to keep up a dangerous inflammation, by its constant pressure on the Iris, but, if it get back into the posterior chamber, it is apt to form such adhesions, as will render its removal afterwards almost impracticable. In confirmation of the propriety of this advice see a note annexed to the translation of Wenzel's treatise on the Cataract, Page 37.

firm

firm consistence from her left eye, in the usual manner, without any particular difficulty; immediately after which, she perceived a number of objects placed before her. I intended, at the same time, to have performed a similar operation on the right eye, but the patient's extreme agitation rendered this improper. The usual compresses and bandage were therefore now applied, and she was removed to her bed. No accident afterwards occurred, during her confinement, that merits a recital; and at the end of ten days, on taking off the applications, and opening the lids, the patient, to my great surprise, not only perceived all objects before her, with the left eye, from which the Cataract had been removed, but also with the right eye, upon which no operation of any kind had yet been performed. She now informed me, that almost immediately after my first examination of her eyes, three days previous to the operation on the left, the right eye became sensible of a very great difference in the strength of the light; and, though I had not then done any thing more
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to it, than to open and shut the lids, a few times in quick succession, in order thereby to learn the state of the pupil, yet the alteration in the sight of the eye, even the same day, was so great, that she could scarcely persuade herself, I had not performed an operation upon it. After the operation on the left eye, both eyes gradually gained strength; they equally received benefit from the use of convex glasses; and the only difference which the patient perceived, between the sight of the right eye, and that of the left, was this; that objects, viewed with the right, appeared tinged with a yellow colour; whereas, when looked at with the left, they preserved their usual appearance. This difference in the sight did not go off; and at the end of some months, on examining the right eye, I found that, notwithstanding the upper part of the pupil appeared perfectly clear, the lower part, comprehending nearly half of this aperture, was still obscured, by a considerable opacity; the situation of which, whether it was in the crystalline, or in
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its capsule, I am not at present able to determine *.

* Since the two preceding papers, on the dissipation of the Cataract, were read before the Medical Society, I have had occasion to attend a considerable number of cases in which an opacity of the crystalline humour was produced by violence done to the eye; and in most of these the opacity was dissipated, and the sight restored, during the external application of *Æther*. Of the cases that proved successful under this mode of treatment, I have a written account of eight; and a recollection of several others, the particulars of which I have now forgotten, having unfortunately omitted to put them on paper at the time the cases were under my care. It was at first my design to publish on this occasion a full copy of the notes I made on the eight above mentioned; but I find, in the description of them, so great a similitude, not only to one another, but to the case of Mr. L. above related, that the perusal of them would be of little use, and perhaps irksome, to the reader. Sometimes I have diluted the æther with a third or fourth part of a weak solution of hydrargyrus muriatus; but in general I have used the æther alone, which has been applied, by means of a camel's hair pencil, to the eye itself. The application of this remedy occasions a very pungent pain in the eye, with considerable redness in the Tunica Conjunctiva; but these go off in a few minutes, and leave the eye as easy, and the Conjunctiva as pale, as they were before the æther was used. By this excitement of inflammation, and by the increased action it occasions

in the different parts of the eye, I presume it is, that the æther promotes the dissipation of the opaque crystalline. In some, the good effects of the application were quickly perceived ; but in others, several weeks have elapsed, before any favorable change was discovered. The progress of amendment has been usually slow ; and in general it has been first noticed by the patient himself, in consequence of the increased strength with which the light affects the eye. About the same time a kind of crack in the opaque crystalline is usually perceived on inspection. The number of these cracks gradually increase, until at length the humour assumes an appearance like that of jelly half dissolved. In a few instances the crystalline humour has continued a long time in this semi-dissolved state ; but in general the pupil has speedily afterwards become quite clear. Sometimes several opaque spots have remained in the capsule of the crystalline, after the crystalline itself has been wholly dissolved. At other times nearly one half of the pupil has continued covered by a portion of the opaque capsule, whilst the other half has been perfectly transparent.

It should be recollected that all the cases of Cataract, to which I here refer, as having undergone this favorable change, during the application of æther to the eyes, were produced by external violence. Two of the eight, for instance, of which I have a written account, were occasioned by a puncture through the Cornea with the pointed end of a fork ; a third by a puncture with a steel drill ; a fourth by a slight perforation with a piece of thin wire ; a fifth by a wound made with a splinter from an iron maul ; the Cornea of the sixth, was cut through,
from

from one side to the other, with a sharp pointed pen-knife; the Cornea of the seventh was burst by a blow with a cricket ball; and that of the eighth, by a splinter from a rotten stick.—In one of the two cases, in which the Cornea was punctured with a fork, the Iris was wounded, and the figure of the pupil, was changed to an irregularly oval aperture:—in that, in which a wound through the Cornea, was made by the sharp end of a pen-knife, a scar was formed in this tunic, which extended obliquely from one side to the other; but, notwithstanding this, a large portion of the pupil remained open; and ultimately this aperture recovered a considerable degree of transparency both above and below the scar:—in two of the other cases, the capsule of the crystalline remained for a long time partially opaque, after the crystalline humour itself was wholly dissolved:—in the rest, the pupils became quite clear, and preserved their round figure as perfectly as if no accident of any kind had happened.

In a few instances, I have mixed an equal quantity of oil of amber with the æther, instead of applying the latter alone. In one of these, the dissipation of the Cataract took place very shortly after the amber was added; but I have not been able, in any of the rest, to ascertain the superior efficacy of this mixture to that of æther alone.

The success which attended the treatment of the cases above related affords a hint for improving the operation, in those cases where there is ground to believe that the opaque crystalline is either soft, or fluid; and in this state it usually is when the disorder is discovered in infants, either at the time of their birth, or shortly afterwards.

ON
THE CURE
OF THE
GUTTA SERENA.

A
DESCRIPTION OF FOUR CASES
OF THE
G U T T A S E R E N A
CURED BY
E L E C T R I C I T Y :

TO WHICH IS ADDED,
An Account of four Cases of the like Nature;
IN WHICH THE CHIEF MEANS OF CURE WAS

A M E R C U R I A L S N U F F :

WITH
INCIDENTAL REMARKS ANNEXED TO THE CASES*.

C A S E I.

A Lady, sixty-three years of age, who had lost the sight of the left eye twenty years, in consequence of a violent opthalmy, was suddenly attacked, in April 1780, with an appearance like black lace

* The first six of the following cases, together with the remarks on their proximate cause, and the mode of their treatment, were read before the Medical Society of London, May 11, 1789.—The seventh case is new;—and the eighth is given by a friend.

hanging before the right eye, and confusing every object at which she looked. It had continued ten days before I saw her. Each day the blackness became deeper and more extensive ; and, at that time, every object presented before the eye was altogether invisible. This eye had never been inflamed, and on examining it, I found that the pupil preserved its natural size and colour ; and that the power of the Iris to dilate and contract this aperture, according to the greater or less degree of light to which the eye was exposed, was not yet wholly lost. The lady had long enjoyed a good state of health, and, the disorder in her sight excepted, was, at the time of consulting me, perfectly well. I immediately applied the electric air by means of a pointed conductor, and continued the application about ten minutes. It was repeated the next day ; and on the third, immediately after being electrified, she had a stronger perception of the light. The same application was repeated every day for a fortnight, when she distinguished all large objects before her. I now placed her on the
glass

glass-footed stool, and took small electric sparks from the eyelids and the other integuments surrounding the eye. This experiment, however, was soon followed by a pain in the head, which rendered her sight more confused. For the present, the use of electricity was therefore wholly omitted. Three leeches were applied to the right temple, and afterwards a blister of the size of half-a crown to the same part. By these means the pain in a few days was removed. The electric air was then again applied, but no sparks. It was continued about ten days longer; at the end of which time she recovered the perfect use of the right eye: and this she preserved till the time of her death, which did not happen till several years after.

CASE II.

Mrs. R. when about thirty years old, was suddenly attacked with a violent head-ach, accompanied with sickness, which continued with little intermission, or abatement for

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the space of three days. After this long paroxysm of severe pain, and probably from this cause, the sight of the left eye became impaired in so considerable a degree, that she was incapable of distinguishing any object, though placed immediately before her. At that time the right eye did not appear to be at all affected; and, during a few following days, she could see with it as perfectly as before. But soon after, the disorder extended to this eye also; and in eight days from the first seizure of the head-ach, she so far lost the sight of both eyes, as not to be able distinctly to perceive even the blaze issuing from a large fire. There still, however, remained some degree of a glimmering sight with the right eye, so as to make her sensible of the difference between night and day. But it was not long before she became totally dark in this eye as well as the other: and on the third day of her being so I was first consulted. On examination I found that her eyes were not at all inflamed, that both the pupils were considerably dilated, and that their size was unalterably the same,

same, though acted upon by the brightest light. I immediately passed a strong stream of the electric fluid through both eyes, which was continued for about ten minutes. This, though powerful enough to be strongly felt when applied to the eye, and even to the hand, of other persons present, seemed to affect the patient only in a very small degree : and the application was renewed several days before she was sensible of the least amendment. In about a week from the time when the first trial was made, as she was returning home after being electrified, she perceived with her right eye some water collected in a gutter ; and the same evening was able to distinguish the light of a candle. The pain in her head still continuing very violent, I then directed three leeches, and after them a blister, to be applied to each temple, with the use of gentle laxatives occasionally, as the state of the body required. The joint effect of these was not inconsiderable (though but partial and temporary) towards giving relief to the patient for the complaint in her head. But as only
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the right eye had yet recovered any sensibility, and that in a small degree, I then renewed the electric applications, placing the patient on the glass-footed stool, and taking small sparks from the integuments surrounding the eyes ; at the same time continuing to pass the electric stream through the eyes themselves. At the end of three weeks the sight of the right eye was so much restored, that with it she could distinguish large letters. But the left eye during the whole of this time remained totally blind ; and the patient was still afflicted with severe sensations of pain in her head, particularly on the left side. Having continued the electric applications near a fortnight longer, without making any visible advance in the cure, I was almost ready to despair of their rendering any further service. Yet, unwilling to give up the use of means which had already administered so much relief, I determined on a further trial ; and accordingly persevered in the use of them some time longer. I was happy to find, that this perseverance was not in vain. For one day whilst I was
taking

taking electric sparks from the left eye, she suddenly exclaimed that she could now perceive a glimmering of light with this eye as she had some time before done with the other ; and this she imputed to the effect which the electric spark then had on a part of the eye which had not before been touched by it. The very next day a great number of objects became visible to this eye ; and from that time there was a progressive daily amendment. . Within a short space of time the sight of both eyes was perfectly restored ; and as the sight returned, the sensations of pain in the head gradually abated, till they entirely ceased.

CASE III.

Mrs. S. in February 1784, when she was in her thirtieth year, was brought to-bed ; and being a woman of a healthy constitution, chose to suckle the child herself. This she did for some time without feeling any inconvenience from it ; but, having continued it for about six weeks, her strength began

began to fail, and continued to decline daily, till she became incapable even of moving about the house without experiencing a very painful languor. About the same time her sight also was affected; first only in a small degree, but afterwards so considerably that the full glare of the mid-day sun appeared to her no stronger than the light of the moon. At this period of her disorder no black specks were visible before either eye, nor did objects at any time appear covered with a mist or cloud; but the patient being further afflicted with a violent pain in the neck, which ran in a direction upward to the side of the head, on that account the person who attended her thought proper to take four ounces of blood from the part first affected, by cupping. After this the sight of the patient was worse than before, and it was not long before she entirely lost the use of both eyes. She had been three days in this state of blindness, when my partner, Mr. Wathen*, was first

* At the time this paper was read before the Medical Society, the partnership still subsisted between Mr. Wathen and the author.

desired to see her. On examining the eyes, he found the pupils of both to be very much dilated, and to remain unaltered in the brightest light. Mr. Wathen's first advice was, that the child should be weaned without loss of time; ordering, at the same time, bark draughts to be taken by the mother three times in the day. He also prescribed an opening medicine, to be taken occasionally, on account of a costive state of body, to which she had been almost constantly subject ever since the time of her delivery. To the use of these remedies was united the frequent application of the vapour of æther to the eyes and forehead. On the fourth day after this mode of treatment was adopted, I visited the patient with Mr. Wathen. From the account she gave of herself, her strength and spirits seemed to be in some degree on the return; and she could then perceive faint glimmerings of light, though the pupils of both eyes were in the same dilated and fixed state as before. The use of the bark and æther was still continued, and the following day a strong stream of the electric

electric fluid was poured on the eyes, whilst several small electric sparks were also variously pointed about the forehead and temples. The day after this, to increase the force of the electrical applications, as it was then thought advisable, the patient was placed on a glass-footed stool, that, being thus insulated, the experiments which had before been tried might be repeated with still greater effect. This process, there is every reason to think, had a considerable influence towards making a perfect cure. On the first attempt it was almost immediately followed with such a degree of amendment, that the patient, to whose sight every object had before been confused, could now clearly distinguish how many windows there were in the room where she sat, though she was still unable to make out the frames of any of them. On the third day, soon after she had been thus electrified, the menstrual discharge came on for the first time since she had been brought to-bed, and continued three days. During that time it was thought proper to suspend

pend the use both of the bark and electricity, which was accordingly done. But no sooner did the reason of the suspension cease, than the use of both was resumed : and the effect was every way to our wishes ; for her sight now mended daily. At the end of a week she could perceive all large objects ; and in a short time her sight was so much recovered that she could read even the smallest print. Her strength, indeed, did not return so quickly : on which account she was advised to remove from town into the country, where the change of air, with the help of a mild nutritious diet, soon restored her to perfect health in every respect.

CASE IV.

Mrs. ————, near forty-five years
of age, was attacked with a violent pleu-
ritic disorder. It continued several weeks;
till at length her strength was so much re-
duced that she became even unable to turn
herself in bed without assistance. But before
this, and near a month after the com-
H mencement

mencement of the pleurisy, she was seized with a violent pain in the left eye, without any apparent inflammation, which she described as shooting upward to the top of her head, and which was soon followed with a considerable dimness in her sight. The dimness continued increasing five days; at the end of which she entirely lost the use of this eye. In the space of three weeks afterwards, a violent pain, similar to that which she first complained of in the left eye, attacked the other also; and was accompanied with the like symptom of shooting upward to the top of the head. The sight of this eye, however, though considerably impaired, was not so rapidly lost as that of the other. The dimness was slower and more gradual in its progress; and, for two or three weeks after, she saw occasionally, or at least fancied she saw, a number of bright sparks, which seemed to dart suddenly across the eye. But in less than a month, what remained of the sight of this eye went off also. On the loss of her sight the pain immediately ceased. It is also to be observed in the case

of this patient, that her spirits had often been much agitated by painful occurrences;—that for many years past she had been subject to frequent returns of rheumatic affections in different parts of the body;—and that, in her late illness, she had tried the power of many medicines, in conjunction with bleeding by leeches on the temples, and the application of blisters both to the head and side.—Besides these trials of medical skill, it was thought proper, during the latter part of her illness, that she should be removed into the country to take the benefit of change of air.—The result of all was that she recovered her strength: but the blindness still continued. In the left eye she had been blind five weeks, and in the right a fortnight, when I was first consulted. On a careful examination of the pupils of both eyes at this time, I found that, though they retained their usual transparency, they were much dilated, so as not to be in the least affected by any degree of light. My first attempt was with the vapour of vitriolic æther, which I directed

her to apply several times in the day to both eyes. With this remedy was united the use of the Peruvian bark, two scruples of which in a glass of white wine were prescribed to be taken three times in the day. Besides which, once in that time, a strong stream of the electric fluid was to have been applied to the eyes, and continued for about ten minutes or a quarter of an hour. But the person employed in the business of the electricity, being unacquainted with the mode of applying the stream, substituted for it, of his own accord, small electric shocks; to which he gave different directions through the head. She had been electrified only three times, and in this way, when her husband was taken ill, and in a few days died. This melancholy event prevented her from attending afterwards to have the electric applications repeated. It is, however, to be noticed, that it had been found not a little serviceable on every trial which had hitherto been made of it; and in particular the last time she was electrified, that the operation was no sooner over than she instantly

instantly perceived a number of objects near her. The bark and æther were still continued as at first ordered; and in about two months the pupils returned to their natural size; and she recovered a sight sufficient to enable her to read common letters with the left eye, and to see all larger objects with the right.

R E M A R K S.

As it will not, I presume, be doubted by any who are made acquainted with the cases above related, that they furnish direct and no inconsiderable proofs of the great use of electricity in the treatment of the Gutta Serena, I therefore beg leave to avail myself of the opportunity which these instances afford, to recommend the trial of this now too much neglected mode of practice, I mean electrical applications, under all similar complaints. It is but a few years ago when electricity was held in such high estimation as to be deemed a sovereign specific for the removal of almost all obstructions in the human frame. Accordingly, at that time,

recourse was had to it in most disorders of this kind, where the more easy as well as common methods of cure did not speedily take effect. In consequence of its being then so generally practised, it is not to be wondered at, that many instances occurred in which it failed of success. But this, I apprehend, has been often owing rather to an injudicious use of it, either in cases to which it was not adapted, or in the manner of using it, than to any want of efficacy in the nature of the remedy when properly applied, and where it was at all likely to be of service. It seems therefore to have been without any sufficient reason, notwithstanding all the discouragements with which it was attended in fact, and which were thought to make against it, that the practice of electricity has of late so much sunk in its reputation as to be almost wholly laid aside. The success I have met with in the use of it very much confirms me in the opinion I have always entertained, that under proper direction it may be rendered of considerable use. This opinion is grounded
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on the subtile and active nature of the electrical fluid, which of itself strongly points out the peculiar propriety of applying it in affections of the nervous system; and in which class of disorders it has been so often tried with the happiest effects: and in incipient cases of the Gutta Serena, of which I am now led more directly to speak, I have known it, under the management of different professional men, as well as in the course of my own practice, to be followed with very remarkable success*.

But, after all, considerable as the relief is which electricity has been found to afford in many instances of this disorder, yet it is not to be expected that this, any more than other remedies, should equally succeed in

* An eminent physician of this city, who has paid particular attention to the effects produced by electricity in medical cases, informs me he has found its application more strikingly useful in cases of the Gutta Serena, when this disorder has been produced by lightning, than when it has proceeded from any other cause. He lately related to me two cases brought on in this way, in both of which electricity proved successful, and very speedily restored the patients to their perfect sight.

all such cases. It is always to be remembered that the causes of the disorder are various, some of which are, from their very nature, incapable of being removed. In proof of this, besides the instances which have occurred under my own inspection, many from authors might easily be quoted ; but it may suffice, at present, to refer only to one, I mean Bonetus, who, in his *Sepulchretum Anatomicum*, lib. i. sect. 18, has given us several such cases ; in four of which, after the decease of the patients, the real state or true cause of their disorders appeared to be as follows :—in one, the blindness was found to be occasioned by an encysted tumour weighing fourteen drachms, which was situated in the substance of the cerebrum, and pressed on the optic nerves near their origin :—in a second, by a cyst, containing a considerable quantity of water, and lodging itself on the optic nerves, at the part where they unite :—in a third, by a caries of the os frontis, occasioning an alteration in the figure of the optic foramina :—and, in a fourth by mal-formation of
the

the optic nerves themselves. Now in all these instances, and in others of the same kind which might be adduced, it must be evident that the causes of the disorder were such as lay beyond the power of art to reach *.

But while, in the cases now referred to, those causes were ascertained on dissection, which could not be known while the patient was living, and which shewed the malady to be in itself altogether irremediable, it must not pass unnoticed, that others also have occurred, in which, upon opening the subject, and after the closest inspection, nothing was to be discovered, either in the structure of the eye, or in the state of any of the component parts contributing to the faculty of vision, which could at all obstruct the performance of their proper offices. In these instances the failure or imperfection of sight was accounted for by supposing

* Maitre Jan had so formidable an idea of the Gutta Serena, on account of the causes from which he apprehended it to proceed, that he pronounced it to be, in every state of the disorder, and at all times, incapable of a cure. *Traité sur les Maladies de l'œil*, p. 253.

some defect in the optic nerves, though not discoverable, and which, however occasioned, disqualified them for conveying the impressions of objects through the eye to the brain: and this was thought to be the only solution which could be given of the difficulty.

I have bestowed not a little attention on the cases of such subjects as those last described; and am led, by reflecting on them, to hazard a conjecture as to one cause, which, at the same time that it seems fully equal to the production of every apparent effect in the disorder now under consideration, does yet make so very little difference in the appearance of the parts affected from what they commonly have after death, that the alteration may easily escape the notice even of those who have acquired no small skill in anatomical investigations.—The cause I mean, is a dilatation of the anterior portion of the *circulus arteriosus*;—which, I think highly probable, has been the cause of the *Gutta Serena*, in not a few of the instances of which no particular account has
been

been given; and especially in those cases where the blindness has been accompanied with an inability of moving the upper eyelid. In the appendix to my remarks on the Ophthalmy, the first edition of which was published in the year 1780, I inserted a case of this last kind which received a perfect cure; and since that time I have met with several similar instances.—But here some explanation may be necessary:

By the term *circulus arteriosus*, anatomists understand an arterial circle, surrounding the sella turcica, which is formed by the carotid arteries on each side, by branches passing from them to meet each other before, and by other branches passing backward to meet branches from the basilar artery behind.

My meaning will perhaps be better understood by the following fuller description. At but a little distance from the points where the carotid arteries enter the cranium through the petrose canals which open by the side of the sella turcica, each artery sends off a branch passing in a straight direction forward till it has reached a little beyond the
part

part where the optic nerves unite, whence it proceeds, in a direction inclining towards a branch from the opposite artery, which it usually joins, and with it forms the anterior portion of the *circulus arteriosus*. It is to this portion of the *circulus arteriosus* to which I here principally refer; and concerning which it is very material to be noticed, that its situation is directly over the optic nerves, which it crosses, lying in close contact with them. Very near to these first branches issuing from the carotid arteries is a second set, I mean one on each side, taking their direction backward for the purpose of meeting other branches from the basilar artery, with which it is also usual for them to unite; thus forming the posterior part, and completing the whole of the *circulus arteriosus*. It is yet further to be observed, that exactly in the same manner as the anterior branches of the carotid arteries cross the optic nerves and lie in close contact with them, so the posterior branches of this artery cross and lie in contact with the *nervi motores oculorum*.—Now, as it is well known

known that all the arteries of the human frame are, from their texture, liable to no small variations both from contraction and dilatation, should a more than common degree of the latter at any time happen to take place with respect to both, or either of those portions of the *circulus arteriosus* which I have been describing, it must then be plain to every one who is at all conversant with the subject, that the nerves severally connected with these parts will, in proportion to the degree in which they are dilated, suffer by compression from them. The dilatation of an artery being, however, not always equal in every part, it is evident that the compression, which is the effect of it, must, as to its extent, be determined by that of the former, which is its proper cause. Should then the dilatation take place in the posterior portion of the *circulus arteriosus*, so as to compress the *nervi motores oculorum*, the consequence will be, that the eyelids, and probably the eyes also, will lose the power of motion. But if the dilatation happens in the anterior portion
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of the circulus, as the compression will then be on the optic nerves, the sight must of course be destroyed. And should the dilatation take place in both portions so as to occasion a compression both on the optic nerves and the nervi motores oculorum at the same time, while the eyelids will hereby be rendered immoveable, the eyes also will be deprived of sight and motion together. For aught we can pronounce, but a small degree of pressure on such tender and exquisitely sensible parts as those we are speaking of, may produce all these dire effects. But, however that may be, it seems not a little to favour the opinion now advanced, that most of the persons I have seen who have been attacked with the united symptoms of blindness and falling of the upper lid, have been, like the girl whose case is above referred to (p. 107,) both young and plethoric; and such subjects appear much more likely to suffer from an undue dilatation of the blood-vessels than those of a different habit. I am further informed by surgeons who have resided in hot climates, that persons, after
much

much fatigue, when the blood is likely to be most rarified, and the vessels through which it passes of consequence most dilated, have not unfrequently in such a state of body been attacked with sudden blindness, without any apparent defect or disorder in the eyes ; and that the cure of such patients has generally been accomplished in a short time by bleeding, blistering, purging, and the application of volatile remedies to the eyes : in which instances, as well as in the former, it seems not a little probable that the blindness was occasioned, in the first instance, by a dilatation of the blood-vessels within the cranium *.

Besides

* Dr. Baillie, in his *Morbid Anatomy of the Human Body*, printed for Johnson 1793, introduces the following observation :

“ It is very common in examining the brain of persons
“ who are considerably advanced in life, to find the trunks
“ of the internal carotid arteries upon the side of the
“ sella turcica very much diseased, and this disease extends
“ frequently more or less into the small branches. The
“ disease consists in a bony or earthy matter being deposited
“ in the coats of the arteries, by which they lose a
“ part

Besides the blood-vessels of which I have been speaking, there is another, not yet noticed, the dilatation of which may also essentially affect the sight : I mean that vessel, the course of which lies directly through the centre of the optic nerve to the retina ;—a branch of which also passes through the vitreous humour, to the capsule of the crystalline lens. The dilatation of this vessel I have often suspected might be the cause of blindness in such instances where it has come on suddenly, and in which, though all objects placed directly before the eyes were totally invisible, there has nevertheless remained some small sense of light, so as to give a confused perception of objects sideways. In such cases, it is to be noticed, that the pupils are seldom much dilated ; notwithstanding which, they admit of very little variation of size in different degrees of light.

“ part of their contractile and distensible powers, as well
“ as of their tenacity. The same sort of diseased struc-
“ ture is likewise found in the basiliary artery and its
“ branches.” Page 308.

A dilated

A dilated pupil is considered by most authors as a symptom peculiarly characteristic of a Gutta Serena; and I have observed it to be a common attendant in most of those cases in which electricity has been found serviceable. Many other instances of blindness are, however, continually occurring, in which, instead of a dilatation, a contraction of the pupil is the only change which takes place in the appearance of the eye. In cases of the latter description, the obstruction in the sight is usually preceded by severe pain: and the original cause of these several effects may be an internal ophthalmy, if prevalent in any considerable degree: and they are not unfrequently accompanied with visible opacity in the crystalline capsule. In cases thus circumstanced, electricity, administered in different ways, has also sometimes been of advantage. But there is a medicine which in many instances has proved its superior as well as more certain efficacy, and which I must therefore greatly prefer to all external applications whatever. The medicine I am speaking of is the corrosive sub-
I liminate,

climate, which in the new London Pharmacopœia is called *hydrargyrus muriatus*. Of this I would recommend a quarter of a grain as a quantity proper for a common dose; which I have found to agree best with the stomach when first dissolved, as Van Swieten directs, in half an ounce of brandy, and then taken in a basin of sago or water-gruel. For young patients, some abatement must be made in the quantity of the dose according to their age, and it should be continued, with as few intermissions as the constitution will admit, for a month or six weeks, and even longer, if found necessary.

I must also add here, that in several instances of the common *Gutta Serena*, I have lately known considerable relief to be obtained by the use of a snuff compounded of ten grains of Turbeth mineral (in the new Pharmacopœia called *hydrargyrus vitriolatus*) well mixed with about a dram of the *pulvis sternutatorius*; or, in place of that, the *glycirrhiza*, or *saccharum commune*. A small pinch of this snuff taken up the
nose

nose is found to stimulate it very considerably ; sometimes exciting sneezing, but in general producing a very large discharge of mucus. It will hardly admit of a doubt, that the benefit derived to the patient from the use of this snuff chiefly depends on its immediate effects, which have been just pointed out : though, at the same time, it is not improbable that some particles of the mercurial preparation, which enters into the composition of this snuff, may make their way to the minuter vessels connected with the part affected ; their action on which may also not a little contribute to its efficacy. Applications of the kind last mentioned in cases of the Gutta Serena have the concurrent testimony of many authors both ancient and modern ; and some of them speak of the chief ingredient in the snuff above described, which is Turbeth mineral, as particularly adapted to give relief in cases of this nature. Mr. Boyle, in his works *, relates a case in which this one ingredient

* Boyle's works abridged, vol. I. p. 103.

was singly administered in its full strength by an empiric at Paris, and was attended with astonishing success. It is, however, to be noticed, that in this instance it operated most violently in the several ways of vomiting, purging, sweating, salivating, and also caused the head to swell to a very large size. I have been a witness to the efficacy of the same application in several instances, in which, being given in its compounded state, the Turbeth mineral was so far covered, or its potency reduced, that it was followed with no such violent effects as in the case related by Mr. Boyle. Of these instances of its success, the four following are so remarkable and satisfactory, that I shall relate the cases at some length.]

CASE V.

W. W. a shipwright in the King's Yard at Woolwich, about forty-six years of age, in the year 1784, received a violent blow on the right eye, which it instantly deprived of sight. A very considerable inflammation ensued,

ensued, which was soon followed by a similar disorder in the other eye. The inflammation in the left eye went off in a short time, without leaving any perceptible bad effects; but that in the right eye continued, and was attended with extreme pain, many weeks; and when at length it abated, the eye still remained totally blind. The sight of the left eye continued perfect until nearly three years had elapsed after the accident above mentioned. It was then attacked with a dimness which slowly but uninterruptedly increased, until, in about twelve months from its commencement, this eye, as well as the other, became so blind that the patient could scarcely distinguish the difference between day and night. In this melancholy state he remained eighteen months; at the end of which I was consulted by him for the first time. I found, on examination, that the pupil of the left eye was much dilated, and its size unalterable in the brightest light. It was also clouded with a slight opacity; but this, when considered alone, was insufficient to account for the patient's total blindness.

The pupil of the right eye was contracted almost to a point, and this point was completely opaque, and turned upwards from its central position, so as nearly to touch the outer margin of the cornea. From the inspection of the case, together with the account I received of its progress, it seemed evident that there was no possibility of recovering the sight of the right eye; and the blindness had continued so long in the left eye, and the disorder so exactly answered to the idea we usually entertain of a fixed Gutta Serena, that I gave the patient no encouragement to expect any relief. Being desirous, however, to try the effects of a mercurial snuff, compounded in the proportion of one part of Turbith mineral with five of liquorice powder, I prescribed it for him, and recommended him to take a pinch of it every night before he went to bed. After this consultation I heard nothing more from him for about six weeks. He then called on me again, and gave me the following satisfactory information. The first three times he used the snuff it made his nose bleed for about ten minutes. After this the hæmorrhage

chage did not return any more, but, each time the snuff was taken, it occasioned the discharge of a considerable quantity of mucus. He had taken the snuff only eight days before he perceived with his left eye the motion of his fingers ; and in eight more could distinguish them one from another, and also some large chalk marks which were drawn on a dark-coloured door. His sight after this became daily more clear, until at the time I saw him, he was able to walk, without any assistance, from his dwelling-house in the town to his work in the yard, and, when there, to employ himself in many different parts of the business of ship-building.

CASE VI.

Mrs. B. a corpulent but healthy woman, about twenty-eight years of age, received a considerable cut on the fore finger of the right hand from a butcher's cleaver ; which, as might be expected, was followed with a profuse bleeding. In consequence of the

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fright and pain which this accident occasioned, she fainted, and continued in that state almost an hour. When she came to herself she had still a very severe sensation of pain, which in a few days caused an inflammation over the whole hand, and threw her into a high fever. At that time her head ached violently;—her eyes, though not inflamed, were the seat of much pain;—and the sight of them so much impaired, as to make both the patient and her friends very apprehensive on that account. The surgeon, who was first called in, was then of opinion that the dimness of sight, so much complained of, was nothing more than an effect of the fever, the reduction of which was therefore the first object of his attention. With this view he prescribed the usual febrifuge draughts; at the same time not neglecting those outward applications which he judged proper for the inflamed hand and finger. But this method of treating the case, however likely to succeed, was in fact found to give no relief either for the complaint of the head or eyes: the pain
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in the one, and the dimness of the other, continuing the same, without the smallest abatement. When she had continued in this state for a week, the further advice of a physician was required; who, besides the use of other internal remedies, thought it material that she should be bled with leeches applied to the temple. Accordingly, as soon as they could be procured, three were applied on each side. This bleeding seemed to do more for her relief, as to the pain of the head, than all that had been prescribed before. For, from that time, her head became much easier; nor was she afflicted with the same pain, at least to any degree of violence, during her confinement. At present, however she was far from being benefited in her sight by any thing which had been done. For the remainder of the day in which the leeches were used, her dimness continued much the same; and though she slept well that night, yet, to her great astonishment, when she awoke the next morning, she found that her sight, instead of being merely dim, was now totally

tally lost. This then was the complaint to which the attention of the faculty was now confined ; remedies having been found for the previous and concomitant ones, which had accordingly subsided. In the course of the two following months, various attempts were made for the recovery of the patient's sight, by the use of means, some more, and others less, common ; but which, whatever success they might have been attended with in other similar cases, were found in the present insufficient to give any lasting relief. Once, indeed, during these applications she thought she perceived a picture which hung against the wainscot at about the distance of seven feet from her. This, however, whether real or imaginary, was little more than a momentary impression ; for, neither at that time, nor at any other, was she able even to distinguish so much as the light of the window. Among other methods of cure which were made use of, she had been three times electrified by Mr. Lowndes, in St. Paul's Church-Yard ; who, as desired, applied the electric wind to both eyes, and
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drew small sparks from the temples, and integuments surrounding the orbit. But, slight as these electrical applications were, yet so extreme was her constitutional timidity, that she was not to be prevailed on to submit to a repetition of them. Whatever hopes, therefore, might have been entertained of success from this quarter, they of course were now given up. On account of a violent pain in the side, she was blooded, and blistered on the back: which I pass without further notice than to say, that though they succeeded, in removing the complaint to which they were immediately directed, still the blindness remained, and seemed as fixed as ever. On the 28th of November, 1787, my partner Mr. Wathen first saw her. He found the eyes at that time to be wholly insensible of light, and the pupils widely dilated. From the view he took of the case, he saw no ground of hope for a cure:—still, however, as it was incumbent on him to try whether any thing could be effected, he prescribed the application of a large blister to the head;—a pill containing one eighth

part of a grain of corrosive sublimate to be given her twice in the day ;—and a small pinch of snuff, compounded of two grains of Turbith mineral with a scruple of the pulvis sternutatorius, to be taken frequently. On the 5th of December I attended the patient. On that day she described some appearance like that of the tables and chairs in the room, which she fancied was before the right eye ; but she saw no object with a degree of clearness to make her certain what it was. She was under this uncertainty even as to the light of a candle ; nor could she be sure of any difference between day and night. On enquiry I found that the pills and snuff had been regularly taken as prescribed ; but that the blister for the head, which had also been ordered, was not yet applied. The effect of the snuff, a pinch of which she took three or four times every day, was to excite violent fits of sneezing, which were followed with a considerable discharge of mucus from the nose. I saw the patient a second time on the 13th of December, and was then happy to find that some further progress was made
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in the cure : for she now told me the colour of my handkerchief ; though, in order to determine concerning it, she was under the necessity of viewing it in one particular direction, to which she could not easily adjust her eye. At that time she also distinguished a wine glass standing on the table :—and, being placed before the window, discovered the motion of several persons who were walking on the opposite side of the street ; but these last mentioned objects being more distant, she was still unable to distinguish one from another as they passed. She continued the use of the snuff and pills regularly from the time of this visit to January the 26th following ; on which day I saw her again, and found the sight of the right eye to be still improving, and that in no inconsiderable degree : but the left eye remained yet totally blind. The dilatation in the pupil of this eye was obstinate and undiminished ; nor had the brightest light the least effect in producing an alteration. It was now judged necessary to increase the potency of the snuff ; for
which

purpose one additional grain of the Turbith mineral was mixed with each scruple of the pulvis sternutatorius. On the 13th of April following, the right eye was so far recovered as to distinguish every object that was placed before it; when she had also so far the use of the left as to discern, and with some degree of clearness, the opening and shutting of my fingers. The pupil of this eye was still much dilated as before; nor was that of the other yet reduced to its ordinary size. As lately as March 17, 1789, the sight of the right eye continued perfect: but that of the left had received very little amendment. The patient then wished to decline the further use of remedies altogether, being perfectly satisfied with the degree of sight she had recovered*.

CASE

* Since the preceding paper was written, I have been informed by Dr. De Valangin, that he has long been in the practice of prescribing the Turbith mineral as a sternutatory, and has found it of distinguished use in many disorders both of the eye and ear. He recommends to mix it with sugar, and in the proportion of one part of
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CASE VII *.

A lady of a very delicate constitution, about thirty years of age, was attacked in November 1791, with a violent pain in her head, attended with an uncommon sensation of weight in the back part of it. The pain, which was supposed at first to be rheumatic, varied much in degree at different times, and sometimes, for short periods, it wholly went off; but after intermitting in this irregular way about three

the former with three of the latter. In order to be more exact in the use of this remedy, I have lately accustomed myself to prescribe one grain of the Turbith mineral to be mixed with eight grains of powder of liquorice, of snuff, or sugar; and one fourth part of this powder to be snuffed up the nose once or twice in the course of the day. And in those cases where the nose has been particularly dry, I have rendered the powder more effectual, by directing the patient to inhale the steam of warm water through the nose previous to the use of the snuff.

* The following case occurred since the time that the preceding part of the paper was read before the Medical Society.

weeks

weeks, it at length became constant, and was attended with other pains of a similar kind in both her shoulders. The head ach was so violent, accompanied with such strong throbbings in both ears, that she had much difficulty to keep her head still on her pillow; and these were soon followed by so great a degree of general debility, that she could scarcely move either her hands or feet. In the progress of every day she had several fainting fits, and in some of these she continued a quarter of an hour before she could be roused from them. Previous to my being consulted she had been attended by an able physician and apothecary; by whose care of her the fainting fits were removed, and her strength somewhat increased; but the pain in the head continued, and for the last fortnight, her sight had gradually failed; objects appearing not only confused, as if they were covered with white crape, but much larger than their natural size; and at length, both eyes became totally blind. On examination, I found that they were free from inflammation; but the pupils, though clear,
were

were much dilated, and their size did not vary at all in different degrees of light. December the 27th, it was agreed in consultation with the gentlemen who had before attended her, to administer a light preparation of the Cortex Peruvianus, three or four times in the course of the day; to apply the vapor of æther to the eyes, twice or thrice during the same period; and to give her a sternutatory powder, composed of a quarter of a grain of Hydrargyrus Vitriolatus, and two grains of common snuff, every night. December the 31st, she continued nearly in the same state in which she was on the 27th. The snuff had excited a copious discharge of mucus from the nose every time it was used. The same remedies were again prescribed; and in addition to these she was desired to chew the Radix Pyrethri, and to have the electric aura applied to her eyes ten minutes every day. The Radix Pyrethri, occasioned a very considerable discharge of Saliva, every time it was used; and, after a few days, small electric sparks, as well as the electric aura, were applied to the eyelids,

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lids, and the other integuments that surround the eye. January the 8th, the pain in the head was much abated, and the lady perceived the hand of a servant who waited on her. The following day she distinguished several large objects. January the 12th, the menses were expected, but did not appear. Her eyelids felt heavier than they had done for many previous days, and her sight was much more dull and confused. An emmenagogue medicine was prescribed, and her feet were put into warm water at bed time, but these did not produce any sensible good effects. On the 15th, however, the sight began again to mend, and she distinguished the shape of a salt-spoon. For a few days before she became totally blind, all objects had appeared magnified; but now, on the contrary, every thing seemed smaller than its real size. After this time both her sight and her strength mended steadily but slowly. The same remedies were still continued; and in about a month from the time I first saw her, she read a common sized print with tolerable facility. When the proper
period

period for the appearance of the menses again came round, this evacuation took place, but it was much less in quantity, and continued a much shorter time than it usually had done when the patient was in a state of health. Several months elapsed before she was quite regular in this respect. The sight of both eyes, however, mended daily, and at length it returned to its usual degree of perfection.

CASE VIII.

The following case, by Mr. R. B. Blagden, surgeon at Petworth in Suffex, was published in the fourth volume of Medical Facts, and Observations, printed for Johnson 1793. Mr. Blagden permits me to introduce it here; and it tends to corroborate the opinion above advanced, of the efficacy of a mercurial snuff in many cases of the Gutta Serena.

“ Mr. ——— aged thirty-one years, of
“ a spare habit, and subject to scrophulous
“ affections of the submaxillary glands, be-

“ tween four and five years ago, on a sudden,
“ and without the smallest injury or previous
“ indisposition, became sensible of such a
“ defect in the sight of the right eye, that
“ he was unable to take his favourite diver-
“ sion of shooting, in the usual way : how-
“ ever as the sight of the left eye enabled
“ him to read, and to use a left handed gun
“ pretty successfully, he was contented ;
“ and probably would have remained so,
“ had not that likewise begun to fail :—a
“ circumstance, of which he first took no-
“ tice about six weeks before he applied to
“ me.

“ On the 7th of October, when I first
“ saw him, the pupils of both eyes were
“ contracted to as great a degree as the pupil
“ of a sound eye is by a sudden and strong
“ light.

“ The pupil of the left eye, on the ap-
“ proach of a very vivid light, shewed so
“ small an alteration as to be scarcely per-
“ ceivable ; and that of the right none at
“ all. With the left the patient could
“ barely see the capital letters which the
“ printers

“ printers call the Four-Lines-Pica ; with
“ the right he could only distinguish light
“ from darkness.

“ The case seemed to me a fair one for a
“ trial of the mercurial snuff recommend-
“ ed, and so successfully used, by Mr.
“ Ware, in the third volume of the Me-
“ moirs of the London Medical Society ;
“ and I accordingly directed the patient to
“ take a pinch of it, (prepared by mixing
“ five grains of the hydrargyrus vitriolatus,
“ with thirty five of the pulvis asari com-
“ positus) every night. As he smiled at the
“ idea of being cured by a pinch of snuff,
“ I gave him two tea-spoonfuls of a mix-
“ ture composed of equal parts of tincture
“ of valerian, and compound tincture of
“ lavender, twice a day in a cup of rose-
“ mary tea : the dose was afterwards in-
“ creased to three tea-spoonfuls.

“ On the 21st of October the patient
“ could see the capital letters with the right
“ eye, and could read the Four-Lines-Pica
“ print with the left.—The pupils were in
“ their general appearance, less contracted ;

“ and they were affected more sensibly by
“ the impression of light. The first five
“ or six times of using the snuff it made his
“ nose bleed freely, and so long as it pro-
“ duced this effect, he thought he per-
“ ceived the advances more strikingly; an
“ additional two grains and an half of the
“ mercurial were therefore put to the next
“ quantity of the pulv. asari. c. and the hæ-
“ morrhage from the nose was reproduced
“ as often as it was made use of.

“ On the 28th of October, the appear-
“ ance and contraction of the pupils were
“ natural;—the patient could read a news-
“ paper, and was able to shoot correctly
“ with his right handed gun.

“ On the 18th of November, the sight
“ of both eyes was in every respect perfect.”

ADDITIONAL REMARKS

ON THE

E P I P H O R A.

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ON THE

EPIPHORA.

IN a paper on the Epiphora read before the Medical Society of London, in December 1790, which was afterwards published in a small pamphlet, together with a few other chirurgical observations, I took some pains to recommend the mode of treatment, which had been first proposed by Monsieur Anel in the year 1712; viz. that of injecting a liquid through the inferior punctum lachrymale, with a view to wash away any matter that might obstruct the passage of the tears, into the nose. At the time the paper above mentioned was read before the society, I had injected, for this purpose, only common water, either cold or warm; and by the help of this alone, I had been fortunate enough to accomplish a cure in several cases; four of which were related

related at some length. In those instances it seems probable, that the obstruction was produced by the lodgement of inspissated mucus alone in some part of the lachrymal duct. But it ought to be remembered, that a similar obstruction may also be occasioned, not only by a tumefaction of the membrane which lines the sac and duct, but by a spasmodic constriction in any part of this canal *.

The

* I scarcely need mention that after the tears have been spread over the eye, to keep it moist and transparent, they are absorbed by two minute orifices, called *Puncta Lachrymalia*, one on the edge, and near to the inner extremity, of each of the eyelids; whence they are conveyed through two small tubes into a little pouch, called *Sacculus Lachrymalis*. This is situated in an excavation in the inner angle of the orbit, formed partly by the nasal process of the *Os Maxillare Superius*, and partly by the *Os Unguis*. Anteriorly the sac has no bony cover. In the adult subject it is about five eighths of an inch long, and a quarter of an inch broad in its widest part. The lower part of the sac forms a duct, about half an inch long, called the *Ductus Nasalis*, which commences at the inner, and inferior edge of the orbit, and is continued through a bony channel till it opens into the nose; through
which

The membrane which lines both the lachrymal sac, and the nasal duct, is not only similar to the pituitary membrane which lines the cavity of the nose, but is a continuation of it. It is full of blood vessels, and has a mucous fluid secreted by its surface, which serves to defend it from being irritated by the tears that continually pass over it. The pituitary membrane, like all other mucous membranes, is liable to be inflamed and thickened by a variety of causes; and when the inflammation and tumefaction of this part take place to any considerable degree, they are apt to extend to the membrane which lines the duct and the sac. The nasal duct is entirely surrounded with bone; whenever, therefore, that part of the membrane which lines this duct

which the tears are discharged. The diameter of this duct, varies much in different subjects. In some, I have seen it sufficiently large to allow a goose quill to pass through it; and in others, apparently of the same age, it has been so small that it would scarcely admit the end of a small crow's quill. The whole of this passage is denominated the *Canalis Lachrymalis*.

is

is thickened, the passage for the tears is necessarily diminished; and when the tears are prevented from passing off, they acquire a degree of acrimony which irritates the membrane of the duct, and contributes to keep up a contraction, and consequently an obstruction, in this part, after the inflammation and tumefaction are removed from the other part of the membrane which lines the nose. The mucus, also, secreted by the membrane of the duct, becomes inspissated, in consequence of the inflammation of this part. By these several means the obstruction in the duct is confirmed; and too often, if the disorder be not attended to, it at length terminates in an abscess of the lachrymal sac; which, bursting externally, produces, according to the strict literal meaning of the term, a *Fistula Lachrymalis*.

Another circumstance which has been assigned by writers as a cause of the Epiphora; and which it will be proper for me here to mention, is a spasmodic constriction in some part of the lachrymal canal, without any tumefaction of the membrane which

lines

lines it, and without any morbid inspissation of the mucus secreted by it *. When this is the cause of the disorder, the constriction is usually situated in that part of the lachrymal canal, which is denominated the nasal duct. It may undoubtedly take place in the lachrymal sac, as well as in the nasal duct; but it is more apt to happen here, not only because the diameter of the duct is less than that of the sac, but because the duct is the only part of the whole canal, intirely surrounded with bone. And the part in which it seems most likely that the con-

* Those cases may perhaps be arranged under this description, in which one, or both, of the puncta lachrymalia, are either closed, or contracted in size. Many such have at different times fallen under my observation. When the puncta are wholly closed, the case is often incurable; but when only contracted in size, relief may be speedily given, by passing the end of a small probe through the puncta, and increasing its size from time to time until the orifices have fully recovered their natural dimensions. In such cases it will also be proper to inject some warm water through the inferior punctum into the nose, in order to ascertain that there is no obstruction lower in the duct.

striction

striction should take place, is its inferior termination, where it opens into the cavity of the nose; as the membrane which lines this part, forms here a fold, which projects beyond the bony rim of the duct, and acts, according to the opinion of many, as a valve or sphyncter of this part *. The fold serves to

* Janin, who published his memoirs on the eye in the year 1772 †, asserts plainly, that the inferior orifice of the nasal duct is bounded by a valve, or sphyncter, placed there in order to check the too rapid descent of the tears through it, and to hinder the air, or any thing else that might prove injurious, from passing upward from the nose into the sac. To go further back, Bianchi, in the year 1715, expressed himself in the following strong terms on the same subject †. “Valvulæ cœterum hujusmodi
 “ præsentiam apud nonnullos controversam adimi dubietas
 “ possit, demonstrabam in subiecto muliebri mense Feb-
 “ ruarii fluentis anni Clar. D. D. Doctoribus Claverotto,
 “ Vaccherio, Pelletta, Massola, cœtuique auditorum
 “ meorum numerofo. Figuram, instar aliarum grandio-
 “ rum omnium, semilunarem ducit hæc valvula; ut ideo
 “ semilunaribus aortæ, aut sigmoideis pulmonaris arteriæ
 “ æquata proportionem molis, æquiparari consulto possit.”

* Memoires et Observations sur l'œil, Lyon, 1772, page 105.

† Ductuum lachrymalium novorum Epistolaris Dissertatio Joanne Baptistâ Bianchi, Taurino 1715, page 26.

Notwith-

to hinder noxious particles from passing upward into the lachrymal sac ; and by some it

Notwithstanding this plain description of a valve, or sphyncter, at the termination of the nasal duct in the nose, Winslow, who published his exposition of the structure of the human body seventeen years after the date of Bianchi's epistle, and in it gives a very accurate description of the organs of sight and smell, takes no sort of notice of such a valve, and only says, that he has sometimes seen the membrane which lines the duct relaxed and folded. He adds as his opinion, that this appearance was the effect of disease, and not the natural state of the part *. Messrs. Pott, Warner, Wathen, Bell, and many other authors, whom I have consulted on the subject, are entirely silent as to the existence of any valve, or sphyncter in this part. Zinn, however, the first edition of whose tract on the eye was published in the year 1755, appears to have attended more accurately to the mode in which the duct terminates ; and in the following words he corroborates the observation that had before been made by Bianchi. " Ductus nasalis in nares patet orificio ita oblique resecto, " uti fere ureteres in vesicam se immittunt, quod orificium " præterea aliqua ex parte clauditur plica membranea femilunari libera, ut aliquam valvulæ speciem exhiberi " videatur †". I have examined a considerable number of

* Exposition Anatomique de la structure du corps humaine, à Paris, 1732, Chapitre de la Tete, N°. 349.

† Descript. Anatom. Oculi Humani Gottingen, 1755, Cap. xlii. Sect. iv.

heads,

it has been supposed to prevent the tears also from descending too rapidly through the duct into the nose. Now when the membrane which lines the duct is stimulated by any cause, it is far from being unlikely that this fold of it should contract; in consequence of which the passage of the tears through the duct will be either partially or wholly intercepted by it.

heads, of persons deceased, in order to obtain satisfaction on this subject; and I always found, when the *Os Spongiosum inferius* remained in its natural position, that the two sides of the membrane which terminated the duct lay flat on the side of the *Os Maxillare*, very near to each other; and the aperture into the duct was scarcely perceptible. But when the *Os Spongiosum* was drawn from the side of the *Os Maxillare*, the aperture became plainly visible, of an oval shape, and appeared to be bounded, as both Bianchi and Zinn have described it, by a membranous fold, the longest diameter of which extended from above downward. The fold was perceptible in all the heads I examined, but was longer in some than in others; and consequently the aperture bounded by it was not always equal in size. In general, it was situated near the anterior extremity of the *Os Spongiosum inferius*; but sometimes it lay further back in the nose, near the posterior extremity, and under the upper edge, of this bone.

If

If a membranous stricture be the sole cause of the Epiphora, the disorder is usually confined to an accumulation of tears in the lachrymal sac, and to the regurgitation of those tears through the puncta lachrymalia, when either the sac is unable to contain more, or when external pressure is made to empty it. In this state it has been called, with some propriety, by French authors, *une hydropisie du sac lachrymale* *. But if either of the other causes I have mentioned occasion the retention, the fluid that regurgitates through the puncta will be mixed with inspissated mucus ; and, in general, the eyelids will be gummed together when the patient awakes in the morning.

* It not unfrequently happens, that the projection which appears on the side of the nose, near the inner angle of the eyelids, in consequence of the retention of tears in the lachrymal sac, may be removed by a slight pressure of the finger upon it ; the retained fluid quickly and almost instantaneously passing into the nose. This circumstance appears to me to corroborate the opinion above advanced, that the stricture, which retains the tears, is sometimes confined within a small space ; and, in such cases, I think it highly probable, that it is situated in the fold of the membrane above described.

It ought, however, to be remembered that when the sebaceous glands on the edges of the eyelids are diseased, the eyes are almost always in a state of irritability; and if they happen to be exposed to an unusual degree of wind, of light, or of heat, a considerable efflux of tears will often be excited, (though there be no obstruction in the lachrymal canal,) which not only obscures but weakens the sight*. It is necessary to distinguish this case from an obstruction in the lachrymal canal, because it requires a very different mode of treatment. In the former, for instance, the remedies must be chiefly applied to the edges of the eyelids, in order to amend the secretion from the ciliary glands; in the latter, the ciliary glands being undiseased, applications to them can answer no good purpose, and the chief object in view is to obtain a free passage for the tears through the duct into the nose.

* An Epiphora may also undoubtedly take place in consequence of a disease in the glandula lachrymalis alone, without any affection of the neighbouring parts; but I believe this to be a very rare occurrence.

Having

Having made these remarks on the different proximate causes of the Epiphora; I now proceed to consider the most effectual modes of cure. And here I beg leave to observe that whether the disorder be produced by the lodgement of inspissated mucus in the cavity of the nasal duct, or by the tumefaction of the membrane which lines this duct, or by a spasmodic contraction in any part of its extent, in any of these cases, the introduction of a remedy to the seat of the disease, by means of a syringe, whose pipe is of a size suited to enter into the inferior punctum lachrymale, is not only very practicable, but I have often found highly beneficial. With regard to the sort of injection that is most proper on these occasions, I formerly made use of plain river water, sometimes warm, and at other times cold. In the use of this, it was my principal intention, to act mechanically on the obstruction, and, by means of the moderate force with which the water was injected, to propel into the nose any inspissated mucus that might lodge in the duct, and impede

the descent of the tears through it. By this mode of treatment alone, I had the satisfaction to accomplish a cure in a considerable number of cases ; but it did not afford equal relief in all. The failures to which I was occasionally subject, induced me to extend my enquiries into the different causes which might lay a foundation for the disorder ; and if the three above mentioned are just, it will follow, that the same remedy cannot always be equally successful ; and that an application which in one case might have proved highly useful, in another might be found wholly ineffectual.

When, for instance, the obstruction to the passage of the tears is produced solely by the lodgement of inspissated mucus in the nasal duct, and is unaccompanied by any tumefaction in the membrane which lines this part, the injection of warm water, or indeed of any other liquor, is sufficient, merely by its mechanical power to remove the mucus, and accomplish a cure ; but, when the lodgement of inspissated mucus is accompanied with a tumefaction of the membrane
which

which lines this duct, the injection of warm water alone might rather tend to increase the tumefaction; and, in such cases, vitriolic, or saturnine applications, seem better adapted to answer the intention of cure. These may be assisted by taking away a small quantity of blood from the vessels, near the lachrymal sac, either by the application of a leech, or by puncturing the angular vein. When, again, the obstruction is occasioned by a spasmodic constriction in some part of the lachrymal canal, astringent applications may rather tend to increase the constriction; and the remedies that seem indicated are, on the contrary, of a relaxing and sedative nature.

It is not easy, however, at all times, to discover the precise cause of the obstruction, and, in consequence, we cannot always immediately ascertain the peculiar mode of treatment that ought to be adopted. Although, for instance, the lodgement of inspissated mucus in the lachrymal sac is often accompanied by a tumefaction of the membrane which lines the nasal duct, it may

also take place without any such tumefaction; and although a spasmodic constriction in a part of the nasal duct, may only produce at first a retention of tears in the lachrymal sac, without altering the consistence of the mucus secreted by it, yet the tears, being retained, will necessarily acquire some degree of acrimony, and these, irritating the sac, will soon produce an inspissation of the mucus secreted by it.

Under the uncertainty, therefore, to which in these cases we are unavoidably subject, I in general begin the treatment by injecting some warm water through the inferior punctum lachrymale, and I repeat the operation four or five days in succession. If in this space of time, none of the water pass through the duct into the nose, and if the watering of the eye continue as troublesome as it was before the injection was employed, I usually open the angular vein, or direct a leach to be applied near the lachrymal sac; adding here a caution that the leach be not suffered to fix on either of the eyelids, lest it produce an extravasation of blood in the
adjacent

adjacent cells *. About the same time that blood is taken away in the neighbourhood of the eye, I usually vary the injection, and try the effects either of a weak vitriolic, or anodyne, lotion. In some instances also, when I have found it impossible, after several attempts, to inject any part of the liquid through the duct, I have introduced a golden probe, about the size of a bristle, through the superior punctum lachrymale, and, attending to the direction of the duct, have insinuated its extremity through the obstruction, and conveyed it fully into the nose; immediately after which I have found, that a liquid, injected through the inferior punctum has passed without any difficulty; and by repeating these operations, for a few successive days, I have at length established the freedom of the passage, and compleated the cure. In other instances, I have recom-

* This accident, after the application of a leach either on the upper or the lower eyelid, is not uncommon; and though it be not attended with any danger, yet the discoloration and tumefaction it occasions, are extremely unpleasant, and they sometimes remain many days.

mended a strongly stimulative sternutatory to be snuffed up the nose, about an hour before the time of the patient's going to rest, which, by exciting a large discharge from the schneiderian membrane, has sometimes also greatly contributed to open the obstruction in the nasal duct.

Cases occur very rarely which may not be relieved by some of the means above related. It ought however to be mentioned, that the Epiphora is sometimes occasioned by a polypous tumor in the nose, obstructing the inferior aperture of the nasal duct; in which case, being a secondary disorder, it can only be relieved by the removal of the polypus that occasions the obstruction. So likewise when the Epiphora is accompanied with an Ozæna, this latter disorder must be removed before the cure of the former can be accomplished.

There is one other remedy for the Epiphora, recommended by antient as well as modern writers, of which it will be proper for me to take some notice here. I mean, the application of a constant gentle pressure, over the lachrymal sac, in order to prevent

its further distention, and to increase its tone and elasticity. The only cases, in which it seems probable that this remedy will prove effectual, are those in which the obstruction is so slight, that though the tears are retained in the sac, yet a small degree of pressure is sufficient to propel them through the duct into the nose. The application of the finger on the sac is perhaps the most accurate mode in which pressure can be made. But as it cannot be continued in this way for any great length of time without inconvenience, an instrument to supply the place of the finger has been invented by several surgeons; of which representations may be seen in the works of Heister, Gooch, and some others. In my own practice, I have seldom found such pressure useful; and it scarcely need be added, that if the obstruction be so considerable, that nothing will pass through the duct into the nose, it is impossible, that external pressure, however applied, can be of essential service.

It not unfrequently happens, that the fluid collected in the lachrymal sac, though
capable

capable of being propelled into the nose by external pressure, has a very offensive taste and smell. In some such instances, the bone behind the duct has been much diseased, and the cure, of course, has been slow. In others the discharge has been speedily corrected by injecting daily through the sac a warm vitriolic lotion; by persevering in the use of which, the sac has sometimes acquired, in a short time, its proper tone, and the accumulation has been prevented in future.

When an Epiphora is occasioned by an acrimonious discharge from the sebaceous glands on the edges of the eyelids, it must be evident, that injections into the sac will be very insufficient to accomplish a cure, because the sac is not the seat of the disorder. The remedies that are employed must be directed, on the contrary, to the ciliary glands themselves, in order to correct the morbid secretion that is made by them; and for this purpose, I do not know any application that is so likely to prove effectual as the *Unguentum Hydrargyri Nitrati*, of the new
London

London Dispensatory, which should be used here in the same manner in which it is applied in common cases of the Pforophthalmy. It will be proper to cleanse the eyelids every morning, from the gum that collects on their edges during the night, with some soft unctuous application; and I usually advise to apply to them two or three times in the course of the day a lotion composed of three grains of white vitriol, in two ounces of rose, or elder flower, water. I beg leave, however, to offer a caution against the mode in which eye waters are too frequently used, viz. by moistening a piece of linen with them, and applying it over the lids. When used in this way, it often happens, that not one drop of the lotion comes in contact with the parts principally affected; and I leave it to the most common observer to determine, whether it be possible for an inflamed eye, and much less for a diseased lachrymal sac, to receive benefit from the best contrived remedies so applied. The manner in which I generally recommend such lotions

to

to be used is either in an eye glass *, so suited to the shape of the eye that it will allow the liquor to go directly to the part affected, or else by means of a camel's hair pencil, which being thoroughly wet with the water, is applied to the edges of the lids in such a way that the water may certainly insinuate itself between them and the globe of the eye. In those cases where it is desirable to have a part of the lotion conveyed into the lachrymal sac, it is particularly proper to attend to the direction now given; and in addition to this, the head should be reclined on the opposite side, in order that the water may collect in the inner angle of the eyelids; the lids being repeatedly opened and shut to assist its absorption, by the puncta lachrymalia.

I have now finished all the remarks which I purposed to make on the subject of the Epiphora. It was my intention, when I began to put these together, to have added

* An eye glass may be purchased at almost every glass or china shop, in London.

some others on the Fistula Lachrymalis. But, as I am not fully prepared at present, to enter on this subject, the consideration of it must be deferred to a future occasion. Before I conclude, however, I beg leave to relate the few following cases; the treatment of which will be found, somewhat different from that which was used in the cases of Epiphora, described in a former tract, on this subject.

CASE I.

Mrs. H. about twenty-five years of age, applied to me on the tenth of August 1792 on account of an Epiphora of the right eye, which had continued upwards of three years. It had been preceded by several styes on the edges of the eyelids, one of which was situated close to the inferior punctum lachrymale. This like the rest broke, and healed in the usual way; but the obstruction in the lachrymal duct commenced soon afterwards; and during the last three months,
the

the watering of the eye had been almost incessant, and, in a great degree, had disabled the patient from attending to any sort of employment. On pressing the sac with my finger, I brought through the puncta lachrymalia a glary fluid, which was almost transparent, having much less of a purulent appearance than it usually has in this disease. I immediately injected some warm water through the inferior punctum, and was surprised to find that it passed freely both into the nose, and throat. The injection was repeated several times in the course of the next fortnight; but at the end of this time, though the Epiphora was much diminished, it was still often troublesome; and whenever I examined the eye, a small quantity of glary mucus was always found in the lachrymal sac. I now varied the injection, and, for this purpose, made use of a solution of three grains of white vitriol in two ounces of distilled water. The next day the patient informed me, that the injection, last used, had made her eye very uneasy for a short time, but that when the pain went off, the eye felt stronger, and the watering

watering was much less troublesome than it had before been. The quantity of mucus collected in the lachrymal sac was also considerably diminished. I repeated the use of the vitriolic injection four times in the following week; after which the watering wholly ceased, and the eye became quite well.

CASE II.

M. C. about forty years of age, who had been troubled with an Epiphora of the left eye between two and three years, and whose sight, during the greater part of this time, had been rendered very imperfect by an almost constant accumulation of tears on the surface of the Cornea, was attacked, in June 1792, with an inflammation of the integuments that covered the lachrymal sac, which, in a day or two afterwards, swelled, and became very painful. The tumefaction continued to increase from the eighth till the twelfth of June, when I first saw her. At this time neither tears nor mucus could be made

made to regurgitate through the puncta lachrymalia, on compressing the sac; and the swelling was so considerable, that an attempt to hinder it from suppurating, appeared to me to be in vain. In order therefore to hasten its termination in this way, I directed a warm bread and milk poultice to be applied immediately, and to be renewed three times a day. On the fourteenth, notwithstanding the inflammation and swelling continued as before, there did not appear to be any advance in the suppuration. I therefore varied from my first plan, and recommended a leach to be applied directly over the sac; adding a caution, that it should not be suffered to fix so near the edge of the lids, as to cause an Ecchymosis in the cellular membrane of this part. The leach drew blood freely, and gave immediate and considerable ease. I now intended to omit the use of the poultice, but, my directions on this subject being misunderstood, it was repeated, as before, when the hæmorrhage ceased; and as the application seemed afterwards to agree, I desired

fired that it might be continued. On the sixteenth, another leach was applied on the sac, and the next day the tumor was still further diminished. The patient took a purgative draught this morning. On the eighteenth, I injected some warm water through the inferior punctum lachrymale, and a small portion of it passed through the duct into the throat. The watering of the eye was much less troublesome afterwards, than it had been for many months. The next day I repeated the use of the injection; and almost the whole contents of the syringe now passed either into the nose, or throat. On the twenty first, and twenty third, the injection was again repeated with similar success. After this, the swelling of the sac entirely subsided, the watering ceased, and the eye became perfectly strong and useful.

CASE III.

Miss S. about ten years old, was brought to me in February 1793, on account of an Epiphora of the left eye, which had been troublesome between three and four years, and of late had become much worse, in consequence of her having had the small pox of a confluent sort. Several remedies had been tried without affording her any relief. At this time the lachrymal sac was filled with a thick white mucus, and the tears ran down the cheek almost continually. I recommended to inject some warm water through the inferior punctum lachrymale; which operation, was performed daily, for some time, by a surgeon in the country; but as it did not render her any benefit, she was brought to town, and committed entirely to my care. I began by adopting a similar method; injecting, for the first week, warm water alone, and afterwards a warm vitriolic lotion, for another week; but

as it did not appear that any of the liquor passed, during this time, into the throat or nose, and as the Epiphora continued still troublesome, I directed a leach to be applied over the lachrymal sac. The hæmorrhage produced by the leach was considerable, but, notwithstanding, the obstruction still remained. I therefore introduced a small golden probe, through the superior punctum, and, by following the course of the duct, carried its extremity through the obstruction into the nose. It was left in the duct about a minute, and then retracted; after which I injected some warm water through the inferior punctum, and had the satisfaction to find that a part of it passed into the throat and nose. The probe was introduced several days in succession; and although, previously, none of the water injected by the punctum would pass into the nose, it went, each day, afterwards without any difficulty. The operation of passing the probe was at first painful; but, on the second, and subsequent introductions, the pain was considerably less severe. In a few days after the injected liquor

had passed into the nose, the watering of the eye greatly diminished; but still a considerable quantity of purulent matter was collected every morning in the lachrymal sac. On this account I varied the injection, and instead of warm water alone, employed, for this purpose, as at the beginning of my attendance, a weak solution of white vitriol. This was injected daily, for about three weeks; and then every second, or third day, for a fortnight longer. The quantity of mucus collected in the sac, after this, was very inconsiderable, and the Epiphora gave so little trouble, that the handkerchief was scarcely ever needed to wipe a tear away.

CASE IV.

In March 1793, I was consulted by Mr. W. in Titchfield street, on account of his daughter, about eleven years old. She had been attacked with the small pox, whilst an infant, during which disorder her eyelids had been glued together for many days. When
they

they were opened, the right eye was found to be affected with considerable inflammation, which was not subdued without much difficulty. After its removal, an Epiphora remained; the tears that flowed over the cheek being generally mixed with a thick mucus. In this state the disease continued, till within a short period of the time at which I was consulted; when the smell of the mucus becoming highly offensive, it gave great reason to fear, that the bone behind the duct was carious. I immediately injected a vitriolic lotion through the inferior punctum lachrymale; but the whole of the liquor regurgitated through the superior punctum, and brought with it a considerable quantity of the putrid matter above mentioned. A similar lotion was directed to be applied frequently, by means of a camel's hair pencil, to the inner angle of the eyelids; and their edges were touched with the Unguentum Hydrargyri Nitrati, in order to correct an acrimonious humour which seemed to be secreted by the glandulæ ciliares. To assist in accomplishing the same purpose, I prescribed

prescribed half a grain of Calomel to be taken constantly, night and morning. The injection was daily repeated, and the whole plan regularly pursued, for ten days; at the end of which time the smell of the discharge became much less offensive; but the watering of the eye was nearly as troublesome as when I first saw her. I now passed a golden probe through the superior punctum, and it went with very little difficulty through the nasal duct into the nostril. The vitriolic lotion was afterwards injected; part of which immediately passed through the duct, and was discharged on the handkerchief when the patient blew her nose. The next day I tried to inject the lotion without passing the probe,—but could not succeed, until this instrument had been first introduced. I pursued a similar mode of treatment daily for a week, and afterwards omitted the use of the probe, and employed the injection alone. This was continued every second day for three weeks longer, the liquor each time passing through the nose, if the head was held forward, or into the throat

throat if held backward. After this time the watering of the eye wholly ceased; but the vitriolic lotion was still continued, as an eye water, on account of the mucus, a small portion of which was occasionally collected, when she awoke in the morning, in the lachrymal sac. It was now, however, perfectly free from any smell, and, when collected, the patient was always able to press it into the nostril, by means of the finger applied on the sac.

CASE V.

The daughter of Mr. C.—about nine years old, was brought to me in August 1794, on account of a constant watering of the right eye, and a frequent accumulation of matter upon it. The disorder had continued above nine months, and appeared at first to be the consequence of a common cold. On compressing the lachrymal sac, a considerable quantity of the same matter that appeared on the eye regurgitated through the puncta lachrymalia. I endeavoured to inject
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some warm water through the inferior punctum into the nose; but none of it would pass. I therefore recommended to wash the eye frequently with a vitriolic lotion, and prescribed a sternutatory powder to be snuffed up the right nostril every evening. On the third day some warm water was again injected through the inferior punctum; but still the whole of it was either retained in the sac, or regurgitated through the puncta. I now directed a leach to be applied on the integuments of the sac, and recommended the vitriolic lotion, and sternutatory powder to be continued as before. On the fifth day, on injecting the water through the inferior punctum, a part of it passed into the throat. The same remedies were continued as before. On the seventh I injected a warm vitriolic lotion, and the whole of it passed either into the throat or the nose. The sternutatory powder and vitriolic lotion were still continued. I repeated the use of the same injection three or four times afterwards, and had the satisfaction, each time, to find that the whole
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of it went properly through the duct. After this the watering of the eye, and the discharge of matter from it, wholly ceased, and the sight became perfectly strong and useful.

CASE VI.

In the beginning of the winter 1793, a lady was attacked, during the time she had a violent cold in her head, with an Epiphora of the right eye; which, after remaining troublesome many months, at length abated in a considerable degree without the use of any particular remedy. The tears however still collected occasionally in the lachrymal sac, and continued to accumulate, until they either regurgitated through the puncta in consequence of the sac's being unable to contain more, or were pushed through the nasal duct by the pressure of the finger. The patient was obliged to have recourse to this last mentioned mode of obtaining relief many times in the course of the day. In June 1794, in consequence of a fresh cold, the passage through the nasal duct became wholly

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closed;

closed; and when the sac was compressed, the retained tears, instead of passing down, regurgitated through the puncta, and flowed over the eye; being frequently mixed with a very offensive matter. After the eye had been in this state about a fortnight the lady applied to me. I injected some warm water several times through the inferior punctum into the sac, in hopes that a part of it might pass through the duct into the nose; but the whole was, each time, either retained in the sac or returned through the superior punctum. I afterwards directed a leach to be applied over the sac; and a strong stimulating powder, to be snuffed up the right nostril every evening. The leach produced a copious bleeding; and the snuff not only excited a considerable discharge from the nose, but induced several very violent fits of sneezing. No immediate good effects were perceived from the application of the leach; but after the snuff had been taken about three times, the inferior aperture of the nasal duct became pervious; so that when a pressure was made on the sac, its contents passed into the nostril, instead of regurgitating,

gurgitating, as before, through the puncta lachrymalia. I injected some warm water through the inferior punctum; the whole of which was still retained in the sac, until by the pressure of the finger, externally applied, it was forced through into the nose. The eye was now brought to the same situation, in which it had been for several months before the patient caught her last cold; and it continued without any material alteration about a fortnight longer; when, upon her taking a fresh cold, the inferior aperture of the duct became again obstructed, and all the old symptoms returned. I recommended the re-application of a leach; and a return to the use of the sternutatory powders. By these means in a few days the obstruction in the duct was again removed; and warm water injected through the inferior punctum passed with more freedom than it had before done, since the commencement of her illness, into the nose. The injection was repeated every day for a fortnight; and during this time the patient frequently inhaled the steam of an infusion of chamomile flowers through
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the affeKed nostril. This with a continued use of the injection and snuff, speedily produced the wished for effect. The retention of tears in the sac. was daily less; and in a short time the Epiphora ceased, and the eye became well.

T H E E N D.



